EV-C3E
RMT-463

SERVICE MANUAL

AEP Model
UK Model
E Model

SONY
Video 8
VTR
SONY

Video 8
U MECHANISM

SPECIFICATIONS

MECHANICAL ADJUSTMENT
As to the mechanical adjustment and check and parts replacement, refer to the separate "8mm Video Mechanical Adjustment MANUAL Ⅲ U mechanism ".
Parts No. 9-972-732-11

System

Video recording system	Rotary two-head helical scanning FM system
Video signal	PAL colour, CCIR standards
Audio recording system	Rotary head, FM system
Usable cassette	8 mm format video tapes
Tape speed	SP: 20.051 mm/sec. LP: 10.058 mm/sec.
Maximum recording/playback time	SP: 1 hour 30 min. (with Sony P5-90) LP: 3 hours (with Sony P5-90)
Fast-forward/rewind time	Approx. 4.5 min. (with Sony P5-90)

Inputs and outputs

LINE IN	VIDEO: Phono jack 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO: Phono jack 47 kilohms, −7.5 dBs (0 dBs = 0.775 V rms)
LINE OUT	VIDEO: Phono jack 1 Vp-p, 75 ohms, unbalanced, sync negative AUDIO: Phono jack Output impedance less than 2 kilohms, −7.5 dBs with 47 kilohms load unbalanced
MONITOR OUT	EURO-AV: 21-pin Video out: pin 19 1 Vp-p, 75 ohms, unbalanced, sync negative Audio out: pins 1 and 3 Output impedance less than 1 kilohms −6 dBs with 10 kilohms load unbalanced
CONTROL L (LANC)	5-pin DIN
RF output signal	UHF channels B30/E30 – B39/E39 (variable)
Aerial input/output	75 ohms asymmetrical aerial sockets

— Continued on page 2 —

● SERVICE OF REMOTE COMMANDER RMT-463

Remote commander RMT-463 is available as a unit. But as individual parts the battery case lid of commander is only available.

8 VIDEO CASSETTE RECORDER

SONY®

MICROFILM

General

Power requirements	AC 220–240 V 50 Hz
Power consumption	13 W
Operating temperature	5°C to 40°C (41°F to 104°F)
Storage temperature	−20°C to +60°C (−40°F to +104°F)
Dimensions	Approx. 178 × 88 × 255 mm (7⅛ × 3½ × 10⅛ inches) (w/h/d) including the projecting parts and controls
Weight	Approx. 2.2 kg (4 lb 14 oz)

Remote commander RMT-463

Remote control system	Infrared control
Command mode	VTR-2
Power requirements	3 V DC, using two IEC designation R6 batteries
Dimensions	Approx. 40 × 18 × 175 mm (1⅝ × ¾ × 7 inches)
Weight	Approx. 55 g (5 oz.) without batteries

Design and specifications are subject to change without notice.

Note
This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

SERVICING NOTE

Flexible Circuit Board Repairing

- Keep the temperature of the soldering iron around 270°C during repairing.
- Do not touch the soldering iron on the same conductor of the circuit board (within 3 times).
- Be careful not to apply force on the conductor when soldering or unsoldering.

Notes on chip component replacement

- Never reuse a disconnected chip component.
- Notice that the minus side of a tantalum capacitor may be damaged by heat.

TABLE OF CONTENTS

Section Title Page

1. SERVICE NOTE

1-1. Ejecting a Malfunctioning Videocassette ···· 6
1-2. Replacing the Videocassette Door Assembly ···· 6
1-3. Service Position (Power Block) ···· 7
1-4. Cleaning the Video Head and Transport System ···· 7
1-5. Replacing the Rotating Drum ···· 8

2. GENERAL

Warning ···· 9
Safety Information ···· 9
Overview of this VTR ···· 10
Labeling the Parts ···· 10
Installation ···· 13
How to Connect this VTR to a TV with Audio-Video Inputs ···· 13
How to Connect this VTR to a TV without Video and Audio Inputs ···· 14
How to Insert Batteries into the Remode Comander ···· 14
Basic Operation ···· 15
How to Insert/Eject Tapes ···· 15
How to Play Back Tapes ···· 16
How to Play Back Tapes in Various Modes ···· 16
Advanced Operation ···· 17
How to Record TV Programmes ···· 18
How to Use the Tape Counter ···· 19
How to Use Editing Featurs ···· 19
How to Copy a Whole Tape Using a Camcorder ···· 20
How to Copy a Whole Tape Using a Second VTR ···· 21
How to Assemble Edit Using a Sony Camcorder ···· 21
How to Assemble Edit Using a Second Sony VTR ···· 22
How to Assemble Edit Using a Second VTR ···· 23
How to Insert Edit Using a Sony Camcorder/VTR ···· 24

3. DISASSEMBLY

3-1. Removal of Front Panel, Case Upper, Plate Bottom ···· 26
3-2. Removal of VI-101, IN-41, FR-38 Boards ···· 26
3-3. Removing Boards Connected by a Board-to-Board Connector ···· 26
3-4. Removal of FC-43 Board ···· 27
3-5. Removal of Power Block RS-32 Boards ···· 27
3-6. Removal of CC-23 Board ···· 27
3-7. Removal of CM-13, UC-3, RP-69 Boards ···· 27
3-8. Removal of RP-69 Board, Flexible Board ···· 28
3-9. Removal of PI-24 Board and RM-44 Board and Rear Frame, Modulator ···· 28
3-10. Removal of MD, Cassette Compartment Block ···· 28
3-11. Removal of MD Section ···· 29
3-12. Notes for Cassette Compartment Assy Installation ···· 29

4. DIAGRAMS

4-1. Circuit Boards Location ···· 30
4-2. Overall Block Diagram ···· 31
4-3. Video Block Diagram ···· 34
4-4. Head Amp Block Diagram ···· 37
4-5. Servo Block Diagram ···· 40
4-6. System Control–Video, Audio Block Interface (CM-13 Board IC401) ···· 43
4-7. System Control–Servo Peripheral Circuit Interface (CM-13 Board IC401) ···· 45
4-8. System Control–System Control Peripheral Circuit Interface (CM-13 Board IC401) ···· 49
4-9. System Control–Mechanism Block Interface (CM-13 Board IC401, CN405) ···· 51
4-10. Display Control Block Diagram ···· 53
4-11. Pin Assignment CXP-5078 (IC101) System Control/Mode Control Block Interface (FR-38 Board IC101) ···· 55
4-12. Audio Block Diagram ···· 59

5. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

5-1. Frame Schematic Diagram ···· 61
5-2. Printed Wiring Boards and Schematic Diagrams ···· 63
- VI-101, CC-56 Boards ···· 63
- CM-13, CC-23 Boards ···· 71
- UC-3, FP-89, FP-90 Boards ···· 75
- IN-41 Board ···· 79
- FR-38 Board ···· 81
- FC-43 Board ···· 83
- AF-20 Board ···· 87
- RM-44 Board ···· 91
- PI-24 Board ···· 92
- RP-69 Board ···· 93
- RS-32 Board ···· 97

5-3. Semiconductors ···· 98

Section Title Page

6. EXPLODED VIEWS

6-1. Cabinet Assembly ··· 99
6-2. Main Chassis Assembly ··· 100
6-3. Cassette Compertment Assy ··· 101
6-4. MD Block Assembly-1 ··· 102
6-5. MD Block Assembly-2 ··· 103
6-6. MD Block Assembly-3 ··· 104

7. ELECTRICAL PARTS LIST ··· 105
HARDWARE LIST ··· 119

8. MECHANICAL ADJUSTMENTS

For mechanical adjustments, refer to the separate "8mm Video Mechanical Adjustments III (U mechanism)"

8-1. Tape Pass Adjustment ··· 121
  8-1-1. Setting the Track Shift Mode ··· 121
  8-1-2. Preparation for Adjustment ··· 121

9. ELECTRICAL ADJUSTMENTS

9-1. Preparation for Electrical Section Adjustment ··· 122
9-2. Power Supply Voltage Check ··· 124
9-3. System Control System Adjustment ··· 124
  9-3-1. Mode Control, LCD Drive Microcomputer Oscillator Confirmation (FR-38 Board) ··· 124
  9-3-2. LINCS MASTER Microcomputer Oscillator Confirmation (FR-38 Board) ··· 124
9-4. Servo System Adjustments ··· 125
  9-4-1. Oscillation Frequency Adjustment (CM-13 Board) ··· 125
  9-4-2. Switching Position Adjustment (CM-13 Board) ··· 125
  9-4-3. Playback SP/LP Adjustment (CM-13 Board) ··· 125
9-5. Video Adjustment ··· 126
  9-5-1. Playback Frequency Characteristics Adjustment (RP-69 Board) ··· 126
    1. CH1 and CH2 Adjustment ··· 126
    2. CH1' Adjustment ··· 126
  9-5-2. Flying Erase Check (RP-69 Board) ··· 127
  9-5-3. Crystal Oscillator fo Check (VI-101 Board) ··· 127
  9-5-4. Sync AGC Adjustment (VI-101 Board) ··· 127
  9-5-5. Y/C Separation Adjustment (VI-101 Board) ·· 127
  9-5-6. Burst Frag Adjustment (VI-101 Board) ··· 128
  9-5-7. Emphasis Adjustment (VI-101 Board) ··· 128
  9-5-8. PB CCD Input Level Adjustment (VI-101 Board) ··· 128
  9-5-9. PB Y Level Adjustment (VI-101 Board) ··· 129
  9-5-10. Y FM Carrier Frequency Adjustment (VI-101 Board) ··· 129
  9-5-11. Y FM Deviation Adjustment (VI-101 Board) ·· 129
  9-5-12. AC Clip Check (VI-101 Board) ··· 130
  9-5-13. Chroma Emphasis fo Adjustment (VI-101 Board) ··· 130
  9-5-14. REC Y Level Adjustment (VI-101 Board) ··· 130
  9-5-15. REC C Level Adjustment (VI-101 Board) ··· 130
  9-5-16. Quasi Burst Phase Adjustment (VI-101 Board) ··· 131
  9-5-17. Delay Burst Phase Adjustment (VI-101 Board) ··· 131
  9-5-18. REC ATF Level Confirmation (CM-13 Board) ··· 131
9-6. Audio System Adjustments ··· 132
  9-6-1. AFM Audio System Adjustments ··· 132
    1. AFM Carrier Frequency Adjustment (AF-20 Board) ··· 132
    2. PB Level Check (AF-20 Board) ··· 132
    3. E-E Output Level Check ··· 132
    4. Overall Level Characteristics Check ··· 133
    5. Overall Frequency Characteristics Check ··· 133
    6. Overall Distortion Check ··· 133
    7. Overall Noise Level Check ··· 133
    Arrangement Diagram for Adjustment Parts ··· 134

SECTION 1
SERVICE NOTE

1-1. Ejecting a Malfunctioning Videocassette

A. Remove Front Panel and FR-38 board.

B. If the videocassette cannot be ejected because the videotape is still wrapped around the drum, remove the CM-13 board on the lower part of the mechanical section. Turn the capstan motor wheel in either direction and turn either the S or T reel to return the tape to the cassette. After the tape is back inside the cassette, proceed to step "C" if necessary.

C. If the videotape is in the cassette half and cannot be ejected :
   1) Remove the front panel. Remove the drive arm lock (located between the L frame and the left part of the cassette control section) away from the drive arm (L) in the direction of the arrow 🅐.
   2) Use both thumbs to turn the adjoining gears in the direction of arrow 🅑.

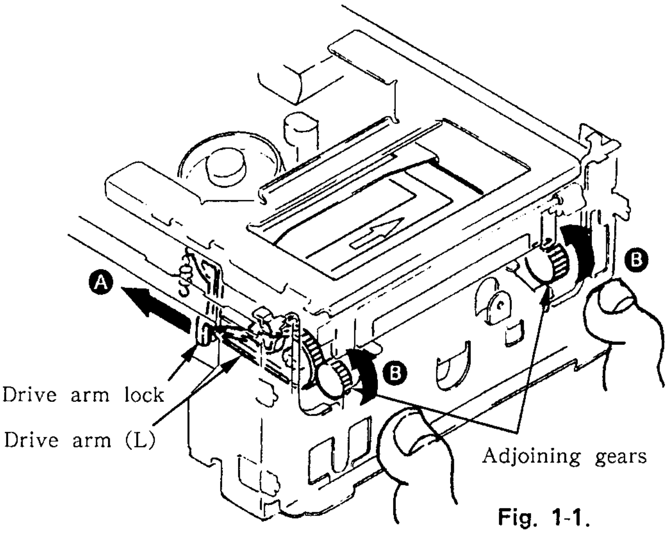


Fig. 1-1.

1-2. Replacing the Videocassette Door Assembly

1) Remove the front panel.
2) Remove the videocassette door assembly first from part 🅐, then from part 🅑.

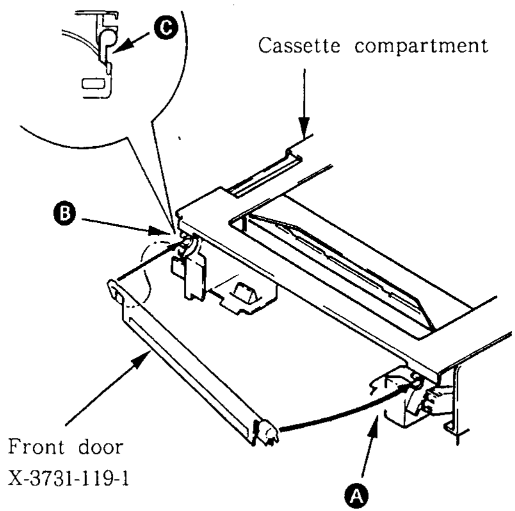
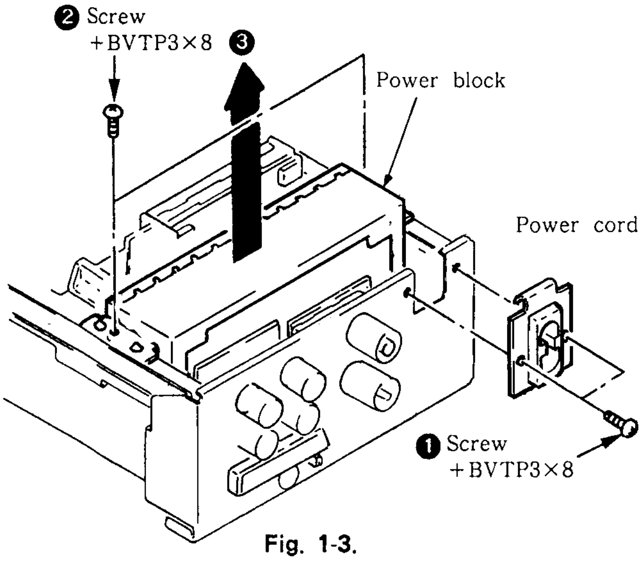


Fig. 1-2.

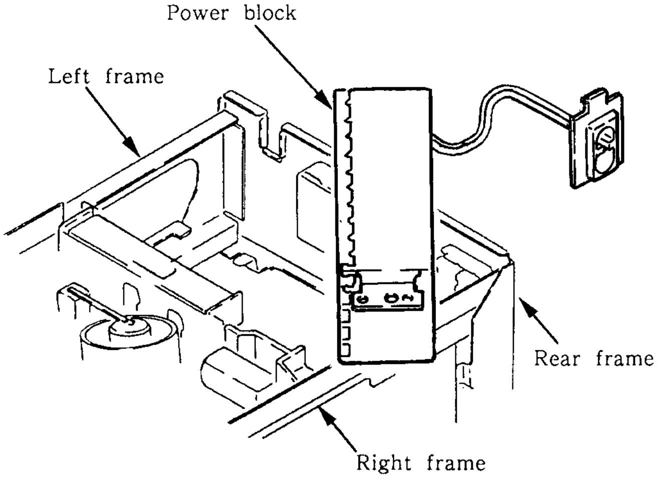
3) When reinstalling the front door assembly, install at part 🅑 first. Install it on the fastener of part 🅒 as shown in the figure. Then install at part 🅐 with the door assembly lowered vertically.

1-3. Service Position (Power Block)



❷ Screw
+BVTP3×8 ❸
Power block
Power cord
❶ Screw
+BVTP3×8

Fig. 1-3.



Power block
Left frame
Rear frame
Right frame

Fig. 1-4.

1-4. Cleaning the Video Head and Transport System

Procedure 1

〔Using a cleaning tape〕

- Use the V8-25CLH cleaning tape. (Before using the cleaning tape, read the instructions carefully.)

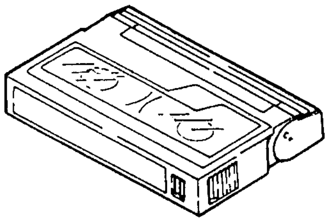
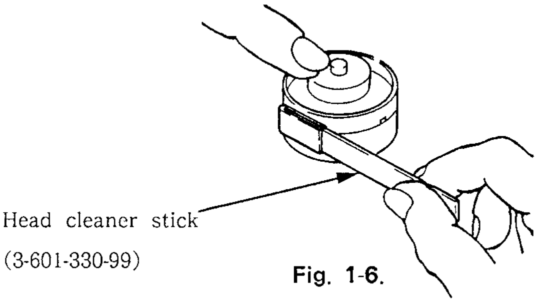


Fig. 1-5.

Procedure 2

〔Using cleaning fluid〕

① Remove the video deck's upper casing.
② Apply the cleaning fluid to the head cleaner stick (Ref. No. 3-601-330-99).
③ As shown in the figure on the right, gently contact the head cleaner stick to the video head, and clean while turning the rubber part on the top of the rotating drum.



Head cleaner stick
(3-601-330-99)

Fig. 1-6.

〔Cleaning the transport system〕

① Apply the cleaning fluid to the head cleaner stick.
② Use the head cleaner stick to clean the tape guide, pinch roller, and other parts that come in direct contact with the tape.

1-5. Replacing the Rotating Drum

Procedure 3

Precautions

- Be especially careful when handling the video head and terminals.
- Hold the drum by the upper part (Part B), do not touch the side of the drum (Part A) directly. See Fig. 1-7.

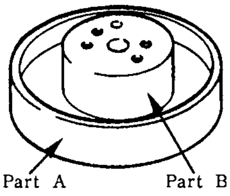

Part A
Part B

Fig. 1-7.

Removing the rotating drum

① As shown in Fig. 1-8, remove the two short screws (2×4).
② Completely remove the eight soldering points on the rotating drum's board. Refer to Fig. 1-8.

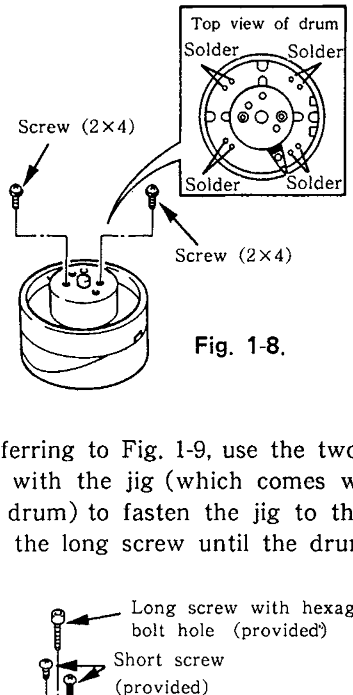

Top view of drum
Solder
Solder
Solder
Solder
Screw (2×4)
Screw (2×4)

Fig. 1-8.

③ While referring to Fig. 1-9, use the two short screws supplied with the jig (which comes with the spare rotating drum) to fasten the jig to the drum. Then screw in the long screw until the drum is removed.

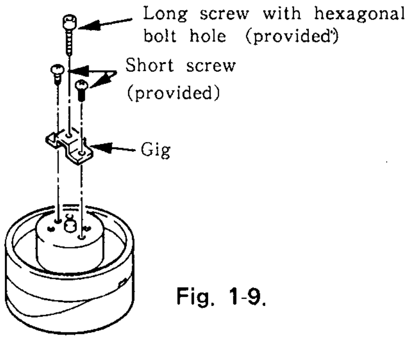

Long screw with hexagonal bolt hole (provided)
Short screw (provided)
Gig

Fig. 1-9.

Installing the new drum

① Clean the flange surface and the new rotating drum's bottom surface. Refer to Fig. 1-10.
② While referring to Fig. 1-10, insert the supplied shaft through the jig and into the positioning hole of the lower drum. Slip the shaft into new rotating drum's positioning hole and gently set the rotating drum.

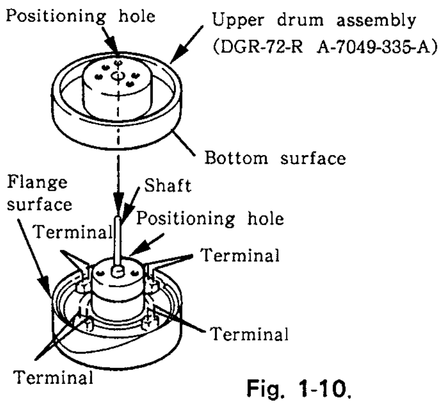

Positioning hole
Upper drum assembly (DGR-72-R A-7049-335-A)
Bottom surface
Flange surface
Shaft
Positioning hole
Terminal
Terminal
Terminal
Terminal

Fig. 1-10.

③ With the shaft still inserted in the positioning hole, use your hand to push down the rotating drum lightly. If the drum does not go down completely, refer to Fig. 1-11. and gradually tighten the two long screws (2×5) alternately to fasten the rotating drum.
④ Take out the shaft. If the shaft cannot be readily taken out, redo the procedure from step ②.

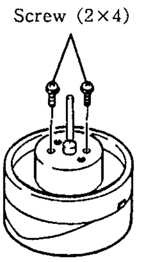


Fig. 1-11.

⑤ While referring to Fig. 1-8, solder the board's eight places and eight terminals.
⑥ After the rotating drum is replaced, use a head cleaner stick to clean the video head and transport system. Follow Procedure 2 of "Cleaning the video head and transport system."

Warning

To prevent fire or shock hazard, do not expose the unit to rain or moisture.

To avoid electrical shock, do not open the cabinet. Refer servicing to qualified personnel only.

NOTICE FOR CUSTOMERS IN THE UNITED KINGDOM

IMPORTANT

The wires in this mains lead are coloured in accordance with the following code:

Blue:	**Neutral**
Brown:	**Live**

As the colours of the mains wires in the mains lead of this apparatus may not correspond to the coloured markings identifying the terminals in your plug proceed as follows: The wire which is coloured blue must be connected to the terminal which is marked with the letter N or coloured black. The wire which is coloured brown must be connected to the terminal which is marked with the letter L or coloured red. Do not connect either wire to the earth terminal in the plug which is marked by the letter E or by the safety earth symbol or coloured green or green-and-yellow.

Caution

Television programmes, films, video tapes and other materials may be copyrighted. Unauthorized recording of such materials may be contrary to the provisions of the copyright laws. Also, use of this recorder with cable television transmission may require authorization from the cable television transmitter and/or programme owner.

Safety information

To prevent fire or electric shock and to extend the life of the unit, please follow the safety procedures below.

For safe opeation

- Operate this unit on 220–240 V AC, 50 Hz.
- Unplug this unit if any liquid or solid object falls in it — have it checked by qualified personnel immediately.
- Unplug this unit if it not going to be used for several days.
- Pull the plug out to disconnect this unit — do not pull on the power cord.
- This unit is not disconnected from the AC power source (mains) as long as it is connected to the wall outlet, even if the unit itself has been turned off.
- Never put heavy objects on this unit.

For safe Installation

- Install this unit so the ventilation openings are not blocked.
- Install this unit away from hot, humid, or excessively dusty places.
- Install this unit away from mechanical vibrations.
- Install this unit on a flat surface and in a horizontal position.
- Install this unit and store tapes away from equipment with strong magnetic fields such as stereo speakers.
- Install this unit away from an AM receiver.

For safe maintenance

- Clean this unit with a dry, soft cloth or a soft cloth slightly moistened with a mild detergent. Never use solvents such as alcohol or benzine.

For safe transportation

- Use the carton and packing materials to transport the unit.

SECTION 2
GENERAL

This section is extracted from instruction manual.

Overview of this VTR

Thank you for purchasing this 8 mm Sony Video Cassette Recorder. You now own a VTR with which you can easily playback and edit tapes you made with your 8 mm camcorder. Some of the ways that you can edit your homemade tapes include:

- Assemble editing — to gather recordings from several tapes onto a blank tape
- Insert editing — to insert a recording into a previously recorded tape

Please remember that you can only use 8 mm-format video tapes with this VTR and that it is not possible to use PCM recording/playback available on some 8 mm recorders. The PCM sound recorded or after-recorded with other recorder cannot be played back with this VTR. You will be able to record tapes in both SP (standard play) and LP (long play) modes.

Using this manual

This manual is organized so all the essential information on how to install and operate your VTR is included in the first three sections of this manual. Look under **Advanced operation** to learn sophisticated tasks such as how to edit tapes using the VTR. Refer to the trouble-shooting section or call your local Sony service facility if you have any problems in operating the VTR.

When you are reading through this manual, please remember that:

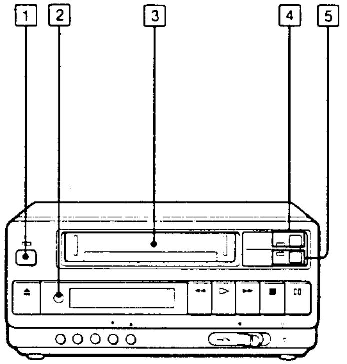
- Buttons and settings on the VTR are in capital letters:
  e.g. Press ON/STANDBY.
- Numbers in illustrations correspond to numbers in the text.
- Notes are separated from the text with a line on the top and bottom.
- The arrow ⇨ indicates signal flow.

Supplied accessories

Please check to make sure that the following accessories are supplied with your VTR.

- 1 Remote Commander (RMT-463)
- 2 R6 (size AA) batteries
- 1 AC power cord (mains lead)
- 1 cable (75-ohms coaxial with IEC connectors)
- 1 cable (audio-video connecting, 2 phono plugs to 2 phono plugs)
- 1 screwdriver

(A-1)



Labeling the parts

On the front

(A-1)

1 **ON/STANDBY switch**
Press to turn the VTR on. The button will light up green when the power is on and light up red when the VTR is in standby.

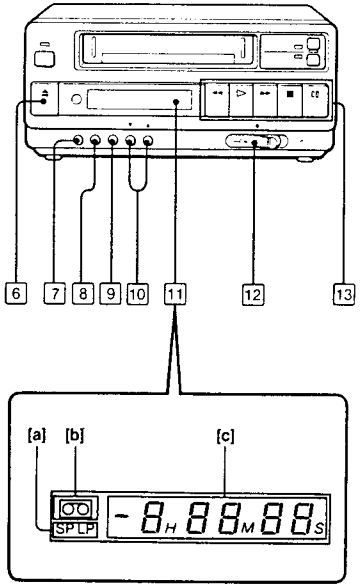
2 **Remote sensor**
This sensor "detects" the commands from your Remote Commander.

3 **Cassette compartment**
Insert 8 mm format video tapes in here.

4 **SYNCHRO EDIT button**
Press when you want to use the SYNCHRO EDIT mode. The button will be lit when this mode is on.

5 **EDIT button**
Press to activate the EDIT mode when you are editing tapes to improve the picture. The button will be lit when this mode is on. Normally keep this mode turned off.

(A-2)



(A-2)

6 ≜ EJECT button
Press to remove the tape from the cassette compartment.

7 SP/LP button
Press to choose between the standard play mode and the long play mode for recording.

8 COUNTER RESET button
Press to reset the tape counter to "0H00M00S".

9 GO TO ZERO button
Press to advance or rewind the tape to the "0H00M00S" point.

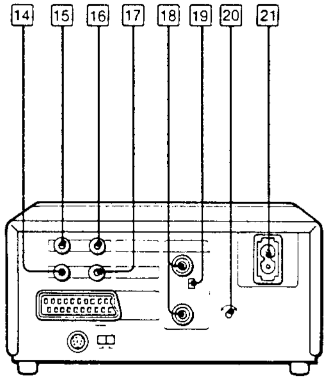
10 SLOW/STILL ADJUST ▼/▲ buttons
Press ▼ or ▲ to adjust streaks in the picture or vertical shifts in the picture during the slow motion/still picture modes.

11 Display window
These indicators will appear in the display window when the VTR is on.
[a] SP/LP recording/playback mode indicator
[b] Cassette indicator
[c] Tape counter

12 ● REC switch
Slide to the right to start recording.

13 Tape transport buttons
Use these buttons to manipulate the tape:
◀◀ REW (rewind)
▷ PLAY
▶▶ FF (fast forward)
■ STOP
▯▯ PAUSE/STILL

(A-3)



On the back

(A-3)

14 LINE OUT AUDIO jack (phono type)
Sends audio signals to your TV or second VTR.

15 LINE IN AUDIO jack (phono type)
Receives audio signals from your TV or second VTR.

16 LINE IN VIDEO jack (phono type)
Receives video signals from your TV or second VTR.

17 LINE OUT VIDEO jack (phono type)
Sends video signals to your TV or second VTR.

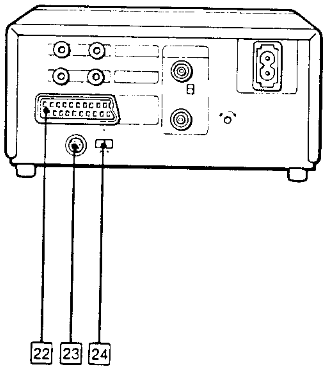
18 AERIAL IN/OUT connectors
Connect IN to the aerial and OUT to the TV for playback.

19 DX/LOCAL switch
Normally set this to DX, but it the TV signal is very strong, set it to LOCAL.

20 RF CHANNEL screw
Adjust with the supplied screwdriver for playback on the TV.

21 AC INPUT socket
Connect the supplied AC power cord.

(A-4)



Labeling the parts

(A-4)

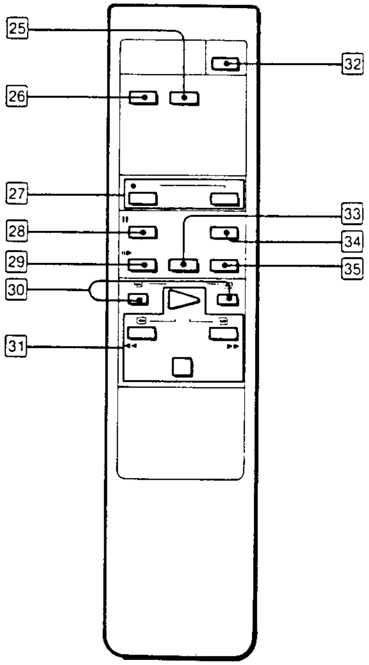
22 MONITOR OUT EURO-AV connector (21-pin)
Sends audio-video signals to your TV or second VTR.

23 CONTROL L connector (5-pin DIN)
Connect to CONTROL L connectors of other Sony products.

24 LANC M/S switch
Set to either M or S. M is used when you are remotely controlling other Sony products by this VTR via the CONTROL L connector. S is used when you are remotely controlling this VTR by another Sony product via the CONTROL L connector.

About LANC
LANC stands for Local Application Control Bus System. The LANC connector is used for controlling the tape transport of video equipment and peripherals connected to it. This connector is has the same function as the connectors indicated as CONTROL L or REMOTE.

(A-5)



Labeling the parts

On the Remote Commander

(A-5)

25 GO TO ZERO button
Press to advance or rewind the tape to the "0H00M00S" point.

26 COUNTER RESET button
Press to reset the tape counter to "0H00M00S."

27 ● REC buttons
Press the two buttons simultaneously to start recording.

28 ❚❚ PAUSE button
Press to stop the tape for a moment.

29 ❚❚▶ FRAME button
Press during playback pause to see the picture frame-by-frame.

30 SEARCH ⏪/⏩ buttons
Press to see pictures in high-speed without pressing either button continuously.

31 Tape transport buttons (PLAY, REW, FF, STOP)
Playbacks, rewinds, fast-forwards, and stops tapes.

32 ⏻ switch
Press to turn the VTR on or off.

33 × 1/10 button
Press during playback for slow-motion playback (1/10 the usual speed).

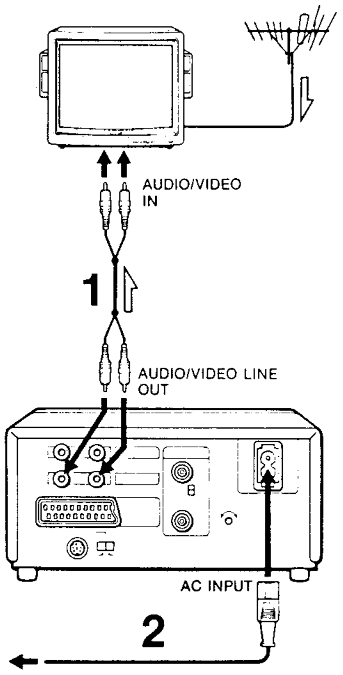
34 × 2 button
Press during playback for fast-motion playback (twice the usual speed).

35 × 1/5 button
Press during playback for slow-motion playback (1/5 the usual speed).

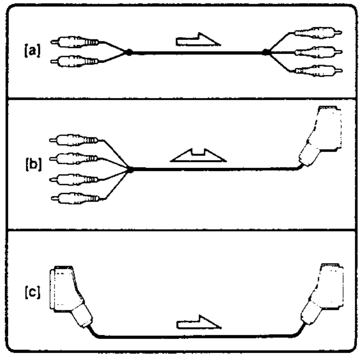
Installation

There are three steps involved in installing this VTR. First, you need to check whether your TV has video or audio inputs, (To do this, look under specifications in the manual which came with your TV.) Second, connect the VTR to the TV. Third, insert batteries into the Remote Commander. For you safety, turn the TV off before you begin these tasks.

(B-1)



(B-2)



How to connect this VTR to a TV with audio-video inputs

(B-1)

1 Plug the supplied A-V cable into the TV and the VTR.
- The yellow plugs should be plugged in VIDEO IN/OUT jacks.
- The grey/black plugs should be plugged in AUDIO IN/OUT jacks.

2 Plug the supplied AC power cord into the VTR and an electric outlet.

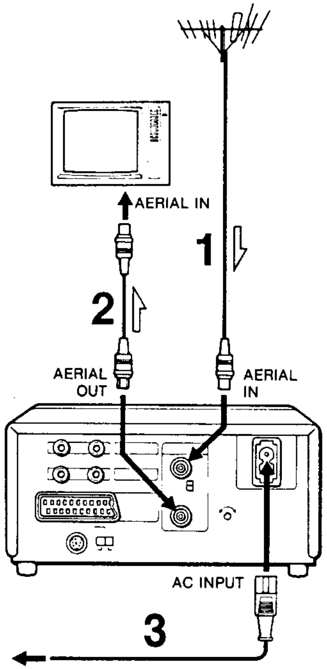
Optional cables (B-2)
Depending on the type of TV you own you may have to use one of the following cables:

[a] If you have a TV with stereo-type audio inputs use a VMC-910MSP/920MSP cable.

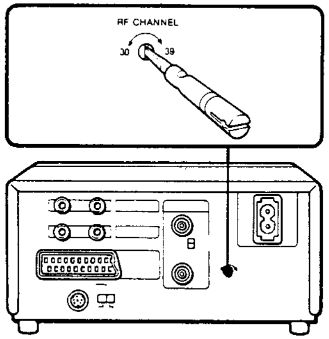
[b] If you have a TV with a 21-pin connector use a VMC-2104M cable. (Unlike the other cables, you can leave this cable as is for both recording and playback).

[c] If you have a TV with a 21-pin connector use a VMC-2121CE cable. (Installing this cable is simple, however, you will only be able to use it for playback).

(C-1)



(C-2)



How to connect this VTR to a TV without video and audio inputs

Making connections

(C-1)

1 **Unplug the aerial's lead from the TV and plug it into the AERIAL IN on the VTR.**

2 **Plug the supplied coaxial cable into the TV and the AERIAL OUT on the VTR.**

3 **Plug the supplied AC power cord into the AC INPUT socket and in an electric outlet.**

Adjusting the RF channel

1 **Turn the TV on and select an empty programme position.**

2 **Turn the VTR on and playback a pre-recorded tape. (See page 18.)**

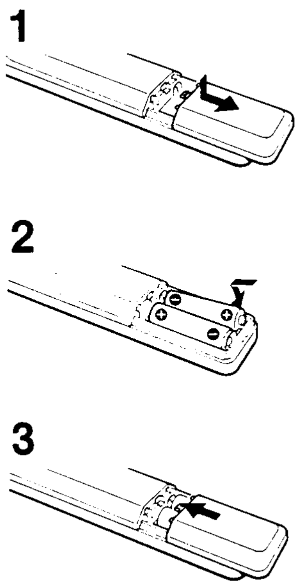
3 **Adjust the TV so the tape that is played back appears clearly on the screen.**

4 **If the playback picture is not free of disturbance, use the supplied screwdriver to adjust the RF CHANNEL to a channel which is not active in your area. (C-2)**

Note

Now your TV is tuned to receive the VTR's playback picture. Whenever you play back a tape, select the programme position you chose in step 1. If you are not sure how to tune your TV, refer to the TV's instruction manual or consult your dealer.

(D)



How to insert batteries into the Remote Commander

(D)

You need to insert two R6 (size AA) batteries into the Remote Commander before you can use it to operate the VTR.

1 **Open the cover of the battery compartment.**

2 **Insert the batteries so the ⊕ and the ⊖ polarities match the polarities inside the battery compartment.**

3 **Close the cover of the battery compartment.**

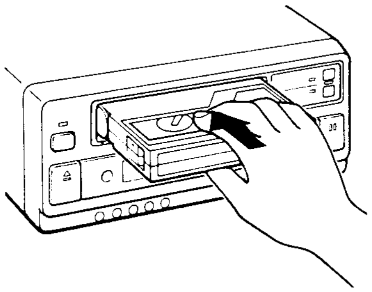
Notes on handling the batteries

- In normal operation, the batteries will last for approximately 6 months.
- If the Remote Commander will not be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

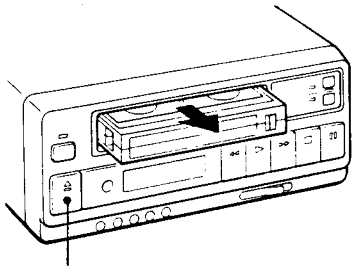
Basic Operation

The section shows you the basic steps involved in playing back a tape. Read through this section to learn how to insert a tape, play back a tape, and play back a tape in various modes such as slow-motion. Note that to play back tapes you must first set the TV/VIDEO selector to VIDEO if your TV has audio-video inputs. If your TV does not have audio-video inputs turn the TV on and select the programme position for the VTR.

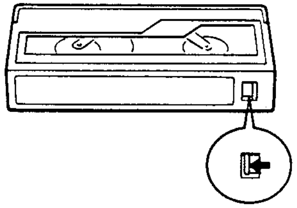
(E-1)



(E-2)



(E-3)



How to insert/eject tapes

To insert a tape: (E-1)
Insert a 8 mm tape in the cassette compartment with the window facing upwards. If the AC power cord is plugged in, the power will automatically turn on.
Do not insert anything but 8 mm-format tapes in the cassette compartment.

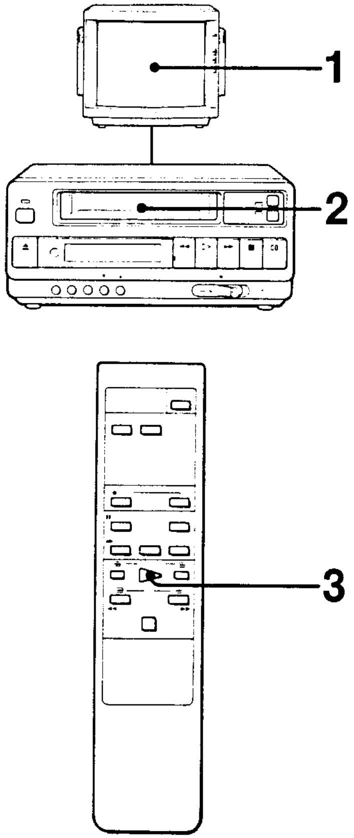
To eject a tape: (E-2)
Press ⏏ to eject the tape.
If the AC power cord is plugged in, the tape can be ejected even if the VTR is in standby.

To preserve recordings: (E-3)
When a new recording is made on a tape, the contents of the tape will automatically be erased. To avoid recording over a tape, slide the tab out to cover the opening. Slide the tab in to re-record on a tape.

General advice for handling tapes:

- To prevent dust from entering the tape, store tapes in their cases.
- To avoid uneven winding, store tapes in an upright position.
- To avoid uneven winding, rewind tapes at high speeds twice a year if they have not been used for a long time.
- To avoid erasing recordings, keep tapes away from electronic equipment with strong magnetic fields such as speakers.
- To prevent tapes from becoming unusable, do not insert anything in the small holes on the side of the tape and keep them away from hot or humid places.

(F)



How to play back tapes

(F)

1 **On a TV with audio-video inputs:**
Turn the TV on and set the TV/VIDEO selector to VIDEO.
On a TV without audio-video inputs:
Turn the TV on and select the programme position for the VTR.

2 **Insert a video tape in the cassette compartment.**
The power will turn on and the cassette indicator lights up in the display window.

3 **Press the ▷ PLAY button.**
The ▷ lights up on the VTR and the playback picture will appear on the screen.

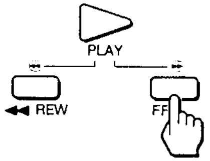
To stop playback, press the ■ STOP button.
To rewind the tape, press the ◀◀ REW button.
To advance the tape in high speed, press the ▶▶ FF button.
To remove the tape from the cassette compartment, press the ⏏ EJECT button.

Auto rewind function
When the tape reaches its end, it will automatically be rewound and stop. The tape will not be rewound, however, after the picture search or the fast-forward modes.

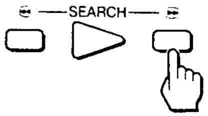
Auto play function
The tape can be set to play back automatically after the tape has finished rewinding. To do this, press the ▷ PLAY button while holding the REW button on the Remote Commander.

(G-1)

(G-2)

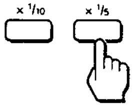


(G-3)



(G-4)

(G-5)



How to play back tapes in various modes

You can play back tapes in modes such as fast-forward, slow-motion, and frame-by-frame. Use the buttons on the VTR or the Remote Commander to play back tapes in these modes.
For most of these modes, you can return to normal playback by pressing ▷ PLAY.

To pause the playback for a still picture: (G-1)
Press ❚❚ PAUSE during playback. The picture will be still on the screen.
If the still mode is left on for more than 7 minutes the unit will automatically return to playback.

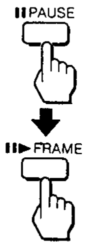
To search for a particular scene: (G-2)
Press ◀◀ REW or ▶▶ FF continuously during playback or still mode. The picture will be in high-speed reverse/forward playback without sound. When you find the scene you want, stop pressing the button and you will return to the playback mode.

To search for a particular scene without having to hold down the button: (G-3)
Press SEARCH ⏪/⏩ on the Remote Commander during playback or still mode. The picture will be in high-speed reverse/forward playback without sound.

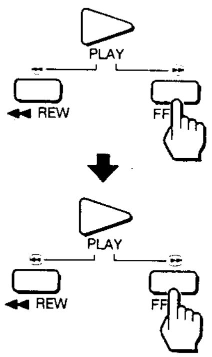
To fast-forward at twice the normal speed: (G-4)
Press ×2 on the Remote Commander during playback or the still mode. The picture will speed up but you will be able to hear the sound.

For slow-motion playback: (G-5)
Press 1/10 or 1/5 on the Remote Commander during playback or the still mode. The sound will be muted in these modes.

(G-6)



(G-7)



How to play back tapes in various modes

To view the picture frame-by-frame: (G-6)
Press ❚❚ during playback, then press ❚❚▶ FRAME several times. The picture will advance frame-by-frame every time you press a button. The sound will be muted.

To view the picture momentarily during either fast-forward or rewind: (G-7)
Press ▶▶ FF during fast-forward and press ◀◀ REW during rewind. You will be able to see a picture when you are pressing the button. Release the button to return to the previous mode.

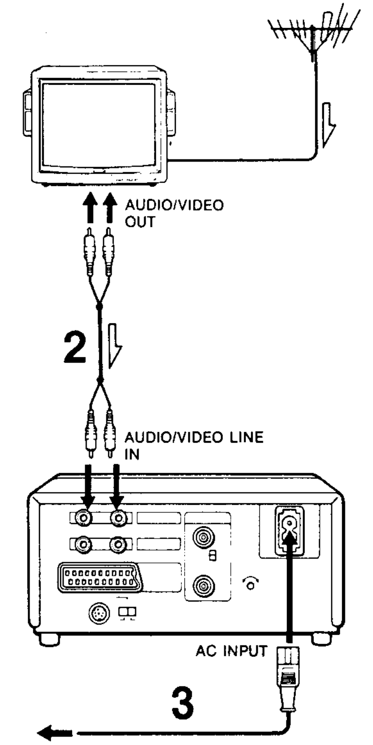
Notes

- A few streaks may appear in the picture and the sound will be muted in the picture search modes. The streaks may be wider for tapes which were recorded in the SP mode than tapes which were recorded inthe LP mode. Depending on the TV you are using, the picture may shake vertically, become black and white, or become dark.
- If the picture shakes vertically during ×2 playback or the still mode, adjust the picture with SLOW/STILL ADJUST ▼/▲ on the front panel of the VTR.
- If there are streaks in the picture during the slow-motion playback or still modes, adjust the picture with SLOW/STILL ADJUST ▼/▲ on the front panel of the VTR. If you are in the still mode, switch to the slow-motion playback mode before you use these buttons.

Advanced Operation

This section shows you how to do complex tasks such as recording TV programmes, using the tape counter, and editing tapes. You must change or add connections between the TV and this VTR to record or to edit tapes. You can use any cable listed in the text of each section to make the appropriate connections.

(H-1)



How to record TV programmes

The main purpose of this VTR is to playback tapes. You can, however, record TV programmes if you have a TV with audio-video outputs. To record programmes you must first change or add new connections between the TV and the VTR.

Making connections

(H-1)

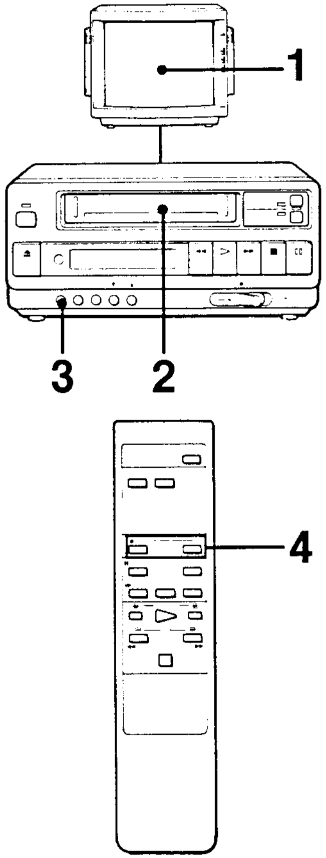
1 **Unplug the A-V cord from the AUDIO/VIDEO IN jacks in the rear of the TV and from the LINE OUT AUDIO/VIDEO jacks in the rear of the VTR.**

2 **Plug the A-V cord back into the TV and the VTR.**
- The yellow plugs should be plugged in VIDEO IN/OUT jacks.
- The grey/black plugs should be plugged in AUDIO IN/OUT jacks.

3 **Plug the supplied AC power cord into the VTR and an electric outlet.**

Notes
- If the TV has L/R stereo outputs, use a VMC-910MSP/920MSP cable. (See page 13.)
- If you have a TV with a 21-pin connector, use a VMC-2104M cable. (See page 13.)

(H-2)



Recording TV programmes

(H-2)

1 **Turn the TV on and choose the program you want to record.**

2 **Insert a tape into the VTR.**

3 **Select the tape speed (SP/LP) at which you want to record.**

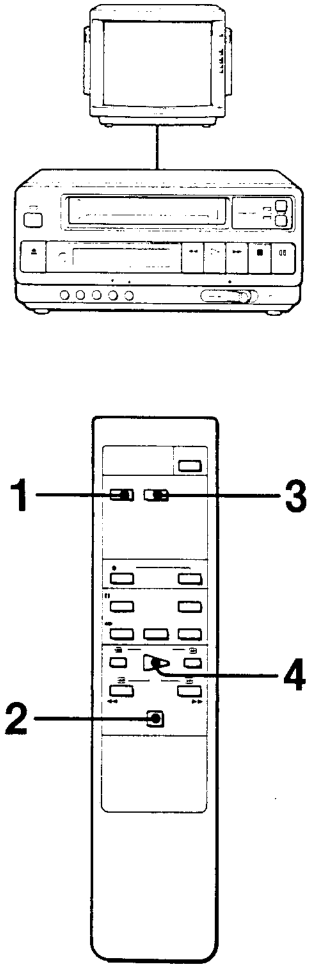
4 **Press the two ● REC buttons simultaneously to start recording.**

Note
You have to keep the TV on to record the TV program.

To stop recording for a moment
Press ❚❚ PAUSE. To start recording again, press ❚❚ PAUSE again. If the recording pause mode is left on for more than 7 minutes, the unit will automatically return to recording.

Auto rewind function
The tape will automatically be rewound when it reaches its end.

(I)



How to use the tape counter

(I)

The tape counter can be useful for playback and recording because you can mark the exact spot that you want to see on the tape.

1. **Press COUNTER RESET during playback/recording to mark the spot that you want to return to.**
   "0H00M00S" will appear on the display window briefly.

2. **Press ■ STOP at the end of playback/recording.**

3. **Press GO TO ZERO.**
   The VTR will start searching for the zero counter point. (If the tape counter does not display more than 1 minute, however, the VTR will not rewind).

4. **Press ▷ PLAY during the search mode.**
   Playback starts from the zero counter point.

Accuracy of the tape counter
Because the tape counter is not a clock, there is a slight difference between the time counter display and the actual recording/playback time. This difference may be noticeable when you have switched to the recording mode.

How to use editing features

You can easily edit your homemade tapes if you have a camcorder or a second VTR as well as the appropriate signal-flow cables. The three ways you can edit tapes are: copying a whole tape, assembling scenes on a blank tape, and inserting scenes into a pre-recorded tape. You can use a Video Editing Controller to operate a player and recorder remotely.

Notes
- Even when using the EDIT mode during editing, the quality of the edited tape will have a certain extent of degradation in picture and sound. Please avoid using the edited tape for multiple generations of editing.
- If is illegal to copy TV programmes, films, video tapes, and other materials which have been copyrighted.

Copying a whole tape

You can duplicate the contents of a tape using either a camcorder or a second VTR. This is convenient when you want a backup copy of a tape or make a copy for a friend. The two examples in this manual show you how to copy a whole tape in:
- a camcorder onto a blank tape in this VTR (See page 27.)
- this VTR onto a blank tape in a second VTR (See page 28.)

Assemble editing

You can assemble scenes from a variety of tapes onto a single blank tape if you have a camcorder or a second VTR. This is useful if you are making a tape, say of your chlid, from several tapes. The three examples in this manual show you how to assemble edit scenes from tapes in:
- a camcorder onto a blank tape in this VTR (See page 29.)
- this VTR onto a blank tape in a second Sony VTR with a control L connector (See page 31.)
- this VTR onto a blank tape in a second VTR without a control L connector (See page 33.)

Insert editing

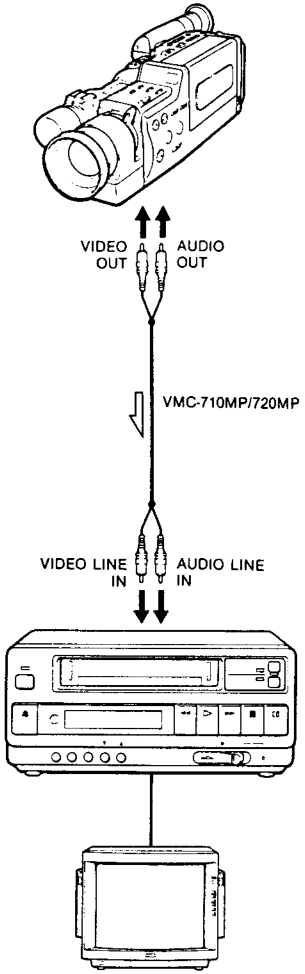
You can insert scenes from tapes onto a pre-recorded tape if you use a second VTR. Again, you will need a camcorder or a second VTR to insert edit. The example in this manual shows you how to insert scenes from tapes in:

- a camcorder/a second VTR onto a pre-recorded tape in this VTR (See page 35.)

Editing with a Video Editing Controller

You can use a Sony Video Editing Controller such as the RM-E100V/RM-E300 to simplify the steps involved in editing. Please refer to the Video Editing Controller manual for detailed description of the connections and the editing procedures.

(J-1)



How to copy a whole tape using a camcorder

(J-1)

To duplicate a tape you must first connect a camcorder to this VTR using an A-V cable. To do this, you can use the supplied cable, or purchase:

- a VMC-710MP/720MP (same type as the supplied cable)
- a VMC-910MSP/920MSP (for camcorders with stereo sound)

The illustration is an example of the connections you need to make when you want to copy a tape from the camcorder to a blank tape in the VTR. After you make these connections, follow these steps:

Preparing the camcorder:

1 **Turn the camcorder on and insert the tape you want to copy.**

2 **Turn the EDIT mode on (if the camcorder has this function).**

3 **Find the point from where you want to start playback and enter the playback pause mode.**

Preparing this VTR:

4 **Insert a blank tape.**

5 **Select the tape speed (SP/LP).**

6 **Press the EDIT button.**

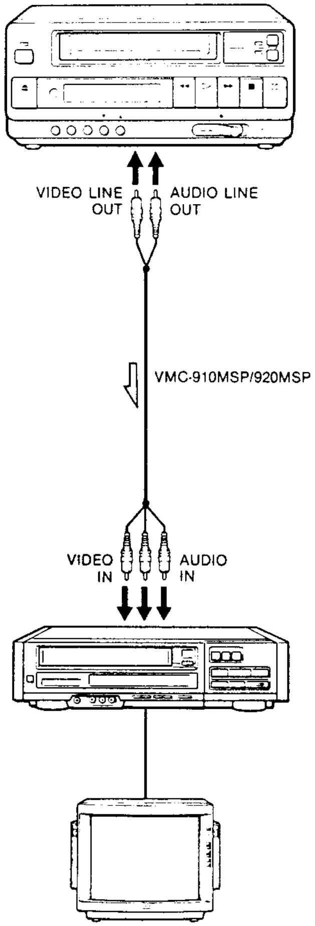
7 **Find the point from where you want to start recording and enter the recording pause mode.**

Recording from the camcorder to the VTR:

8 **Press ❚❚ PAUSE on both the camcorder and the VTR simultaneously.
The copying will begin.**

9 **Press ■ STOP on both the camcorder and the VTR to stop copying.**

(J-2)



How to copy a whole tape using a second VTR

(J-2)

To duplicate a tape you must first connect a second VTR to this VTR using an A-V cable. To do this, you can use the supplied cable, or purchase:

- a VMC-710MP/720MP (same type as the supplied cable)
- a VMC-910MSP/920MSP (for VTRs with stereo sound)

The illustration is an example of the connections you need to make when you want to copy a tape from this VTR to a blank tape in the second VTR. After you make these connections, follow these steps:

Preparing the VTR:

1 **Insert the tape you want to copy.**

2 **Press the EDIT button.**

3 **Find the point from where you want to start playback and enter the playback pause mode.**

Preparing the second VTR:

4 **Insert a blank tape.**

5 **Turn the EDIT mode on (if it has this function).**

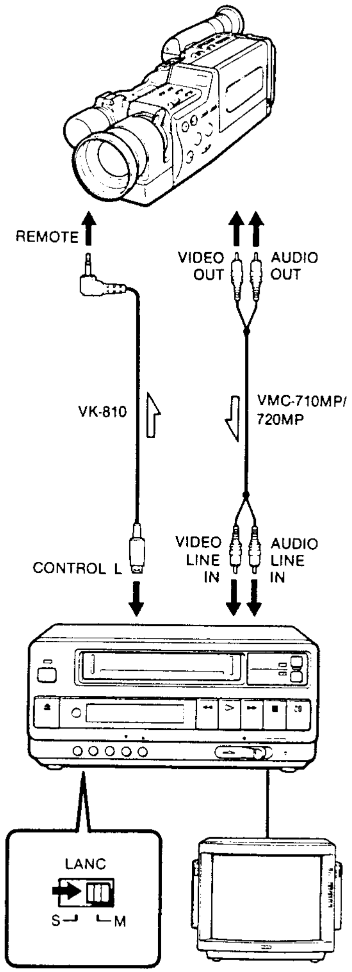
6 **Find the point from where you want to start recording on the tape and enter the recording pause mode.**

Copying from this VTR to the second VTR:

7 **Press ▮▮ PAUSE on both VTRs simultaneously.
The copying will begin.**

8 **Press ■ STOP on both VTRs to stop copying.**

(K-1)



How to assemble edit using a Sony camcorder

(K-1)

To gather scenes from various tapes onto a blank tape, you must first connect a camcorder to this VTR. To do this, use an A-V cable and a control cable such as:

- a VMC-710MP/720MP (same type as the supplied cable)
- a VMC-910MSP/920MSP (for camcorders with stereo sound)
- a VK-810 (control cable)

The illustration is an example of the connections you need to make when you want to edit scenes from tapes you put in the camcorder to a blank tape in this VTR. After you make these connections, follow these steps:

Preparing the camcorder:

1 **Turn the power on and insert the tape you want to edit.**

2 **Turn the EDIT mode on (if the camcorder has this function).**

3 **Find the point from where you want to start playback and enter the playback pause mode.**

Preparing this VTR:

4 **Insert a tape.**

5 **Set the LANC M/S switch in the rear to M.**

6 **Select the tape speed (SP/LP).**

7 **Press the EDIT button.**

8 **Find the point from where you want to start recording and enter the recording pause mode.**

How to assemble edit using a Sony camcorder

Editing from the camcorder to the VTR:

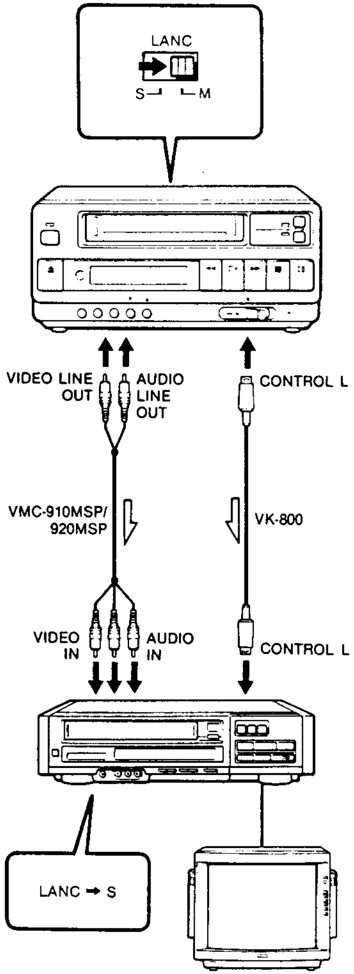
9 Press SYNCHRO EDIT on the VTR.
The editing will begin.

10 Press SYNCHRO EDIT when you want to stop editing.

To edit the next scene:
Repeat steps 3, 9, and 10.

To finish assemble editing:
Press ■ STOP on both the camcorder and this VTR.

(K-2)



How to assemble edit using a second Sony VTR

(K-2)

To gather scenes from various tapes onto a blank tape, you must first connect a second Sony VTR with control L connector to this VTR. To do this, use an A-V cable and a control cable such as:
- a VMC-710MP/720MP (same type as the supplied cable)
- a VMC-910MSP/920MSP (for VTRs with stereo sound)
- a VK-800 (control cable)

The illustration is an example of the connections you need to make when you want to edit scenes from tapes you put in this VTR to a blank tape the second VTR. After you make these connections, follow these steps:

Preparing this VTR:

1 Turn the power on and insert the tape you want to edit.

2 Set the LANC M/S switch in the rear to M.

3 Press the EDIT button.

4 Find the point from where you want to start playback and enter the playback pause mode.

Preparing the second VTR:

5 Insert a tape.

6 Set the LANC M/S switch to S.

7 Turn the EDIT mode on (if the VTR has this function).

8 Find the point from where you want to start recording and enter the recording pause mode.

Editing from this VTR to a second VTR:

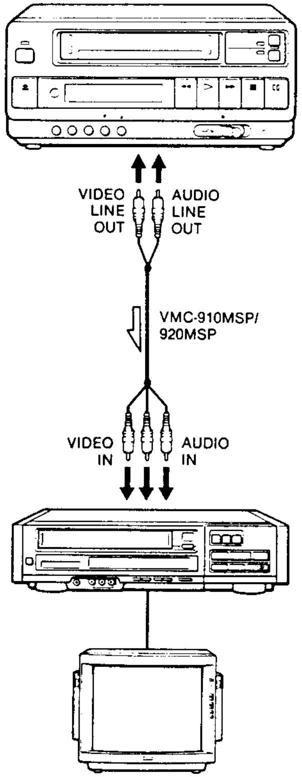
9 Press SYNCHRO EDIT on this VTR.
The editing will start.

10 Press SYNCHRO EDIT to stop editing.

To edit the next scene:
Repeat steps **4**, **8**, and **9**.

To finish assemble editing:
Press ■ STOP on both VTRs.

(K-3)



How to assemble edit using a second VTR

(K-3)

To gather scenes from various tapes onto a blank tape, you must first connect a second VTR not equipped with a control L connector to this VTR. To do this, use an A-V cable such as:

- a VMC-710MP/720MP (same type as the supplied cable)
- a VMC-910MSP/920MSP (for VTRs with stereo sound)

The illustration is an example of the connections you need to make when you want to edit scenes from tapes you put in this VTR to a blank tape in the second VTR. After you make these connections, follow these steps:

Preparing this VTR:

1 Turn the power on and insert the tape you want to edit.

2 Press the EDIT button.

3 Find the point from where you want to start playback and enter the playback pause mode.

Preparing the second VTR:

4 Insert a tape.

5 Turn the EDIT mode on (if the VTR has this function).

6 Find the point from where you want to start recording and enter the recording pause mode.

How to assemble edit using a second VTR

Editing from this VTR to a second VTR:

7 Press ❚❚ PAUSE on both VTRs simultaneously.
The editing will start.

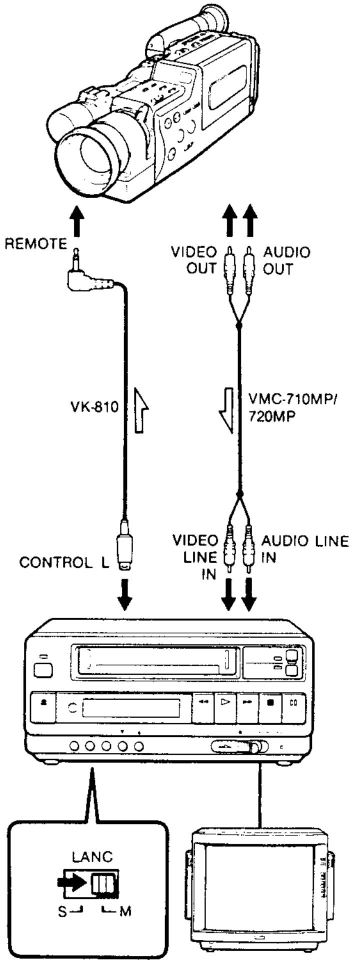
8 Press ❚❚ PAUSE on the second VTR to stop editing.

To edit the next scene:
Repeat steps **3**, **7**, and **8**.

To finish assemble editing:
Press ■ STOP on both VTRs.

How to insert edit using a Sony camcorder/VTR

(L)



(L)

To insert scenes from various tapes onto a pre-recorded tape, you must first connect a Sony camcorder or second VTR to this VTR. To do this, use an A-V cable and a control cable such as:

- a VMC-710MP/720MP (same type as the supplied cable)
- a VMC-910MSP/920MSP (for VTRs with stereo sound)
- a VK-810 (control cable for camcorders)
- a VK-800 (control cable for VTRs)

The illustration is an example of the connections you need to make when you want to insert scenes from tapes you put in the camcorder onto a pre-recorded tape in this VTR. After you make these connections, follow these steps:

Preparing the camcorder:

1 Insert the tape you want to edit.

2 Press the EDIT button (If the camcorder has this function).

3 Find the point from where you want to start playback and enter the playback pause mode.

Preparing this VTR:

4 Insert a pre-recorded tape.

5 Set the LANC M/S switch in the rear of the VTR to M.

6 Select the same tape speed (SP/LP) as the tape you want to edit.

7 Press the EDIT button.

8 Find the point from where you want to stop recording and enter the recording pause mode.

9 Press COUNTER RESET to display "0H00M00S."

10 Rewind the tape and enter the recording pause mode at the start of the edit.

How to insert edit using a Sony camcorder/VTR

Editing from the camcorder to this VTR:

11 **Press SYNCHRO EDIT on the VTR.**
The editing will start. When the tape counter on this VTR displays "0H00M00S," the camcorder enters the playback pause mode and this VTR enters the recording pause mode.

12 **Press SYNCHRO EDIT or ■ STOP when you want to stop recording.**

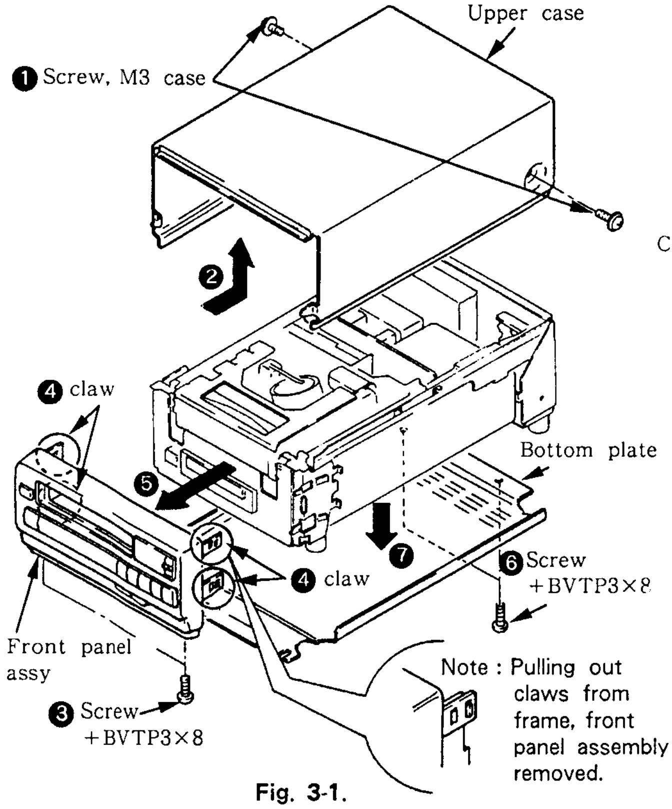
To insert the next scene:
Repeat steps **3**, and **8** to **11**.

To finish insert editing:
Press ■ STOP on both the camcorder and the VTR.

SECTION 3
DISASSEMBLY

Note : Follow the disassembly procedure in the numerical order given.

3-1. REMOVAL OF FRONT PANEL, CASE UPPER, PLATE BOTTOM


❶ Screw, M3 case
Upper case
❷
❹ claw
❺
Bottom plate
❼
❻ Screw
+BVTP3×8
❹ claw
Front panel
assy
❸ Screw
+BVTP3×8

Note : Pulling out claws from frame, front panel assembly removed.

Fig. 3-1.

3-2. REMOVAL OF VI-101, IN-41, FR-38 BOARDS

- Return bottom of the set above.
- Separate connectors before VI-101, IN-41 boards remove.

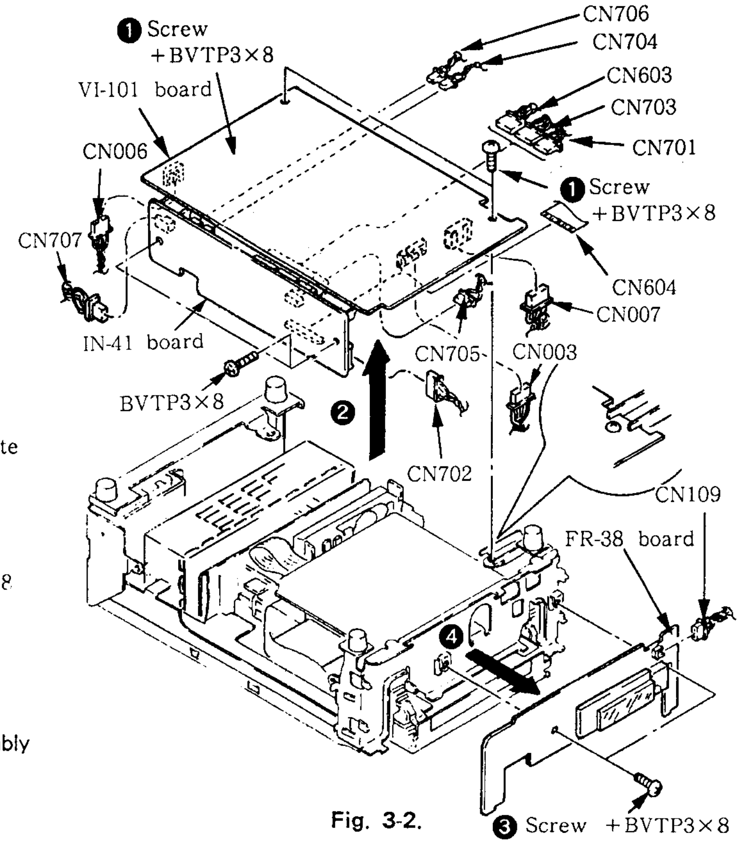

❶ Screw
+BVTP3×8
VI-101 board
CN006
CN707
IN-41 board
BVTP3×8
❷
CN706
CN704
CN603
CN703
CN701
❶ Screw
+BVTP3×8
CN604
CN007
CN705
CN003
CN702
CN109
FR-38 board
❹
❸ Screw +BVTP3×8

Fig. 3-2.

3-3. REMOVING BOARDS CONNECTED BY A BOARD-TO-BOARD CONNECTOR

Example : Removing the VI-101 board from the IN-41, AF-20 board

1) Flat the IN-41 board as shown in Fig. 3-3. ❶.
2) As shown in Fig. 3-3. ❷, pull out the IN-41 board from the VI-101 board.
3) Before removing the AF-20 board, turn PCB support ❸.
4) Remove the AF-20 board from the VI-101 board ❹.

Note : Pulling out the board forcefully may damage the connector or pattern. Therefore use care when removing the board.

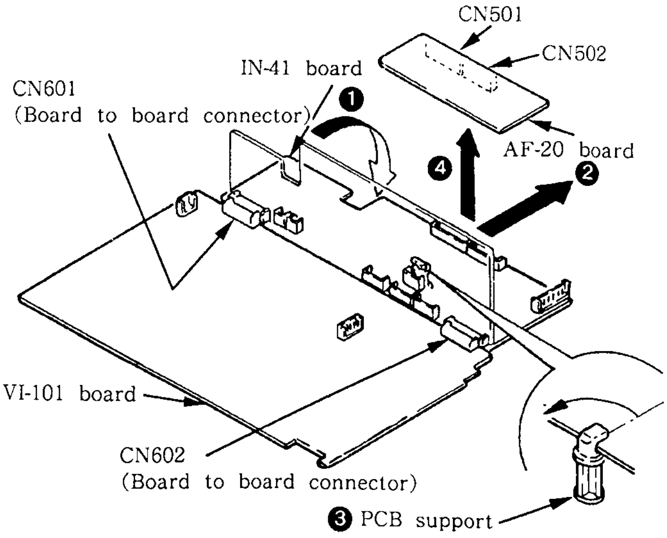

CN501
CN502
IN-41 board
❶
CN601
(Board to board connector)
❹
AF-20 board
❷
VI-101 board
CN602
(Board to board connector)
❸ PCB support

Fig. 3-3.

3-4. REMOVAL OF FC-43 BOARD

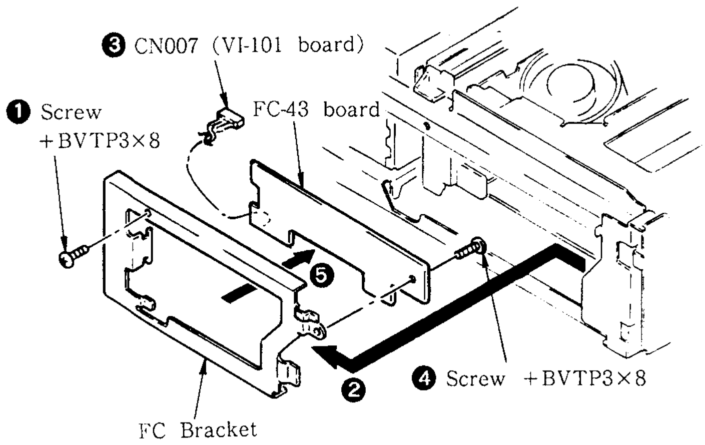

❸ CN007 (VI-101 board)
❶ Screw +BVTP3×8
FC-43 board
❺
❷
❹ Screw +BVTP3×8
FC Bracket

Fig. 3-4.

3-6. REMOVAL OF CC-23 BOARD

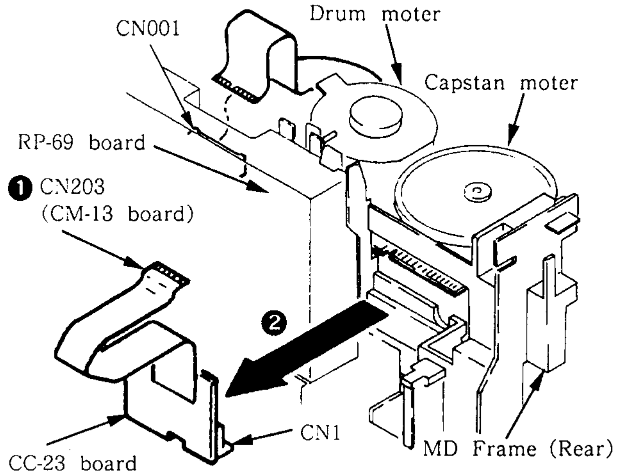

CN001
Drum moter
Capstan moter
RP-69 board
❶ CN203 (CM-13 board)
❷
CN1
CC-23 board
MD Frame (Rear)

Fig. 3-6.

3-5. REMOVAL OF POWER BLOCK RS-32 BOARDS

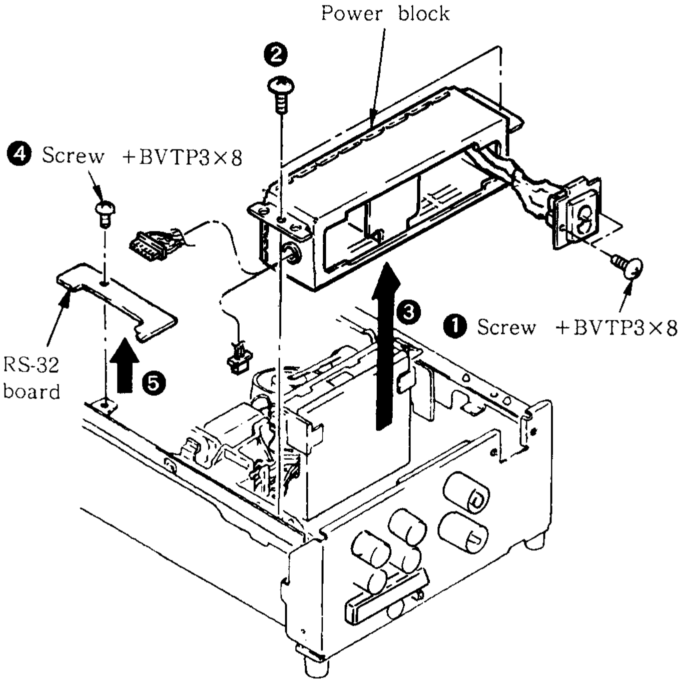

Power block
❷
❹ Screw +BVTP3×8
❸
❶ Screw +BVTP3×8
RS-32 board
❺

Fig. 3-5.

3-7. REMOVAL OF CM-13, UC-3, RP-69 BOARDS

- Remove bottom of the set.
- Separate connectors before CM-13, UC-3, RP-69 boards remove.

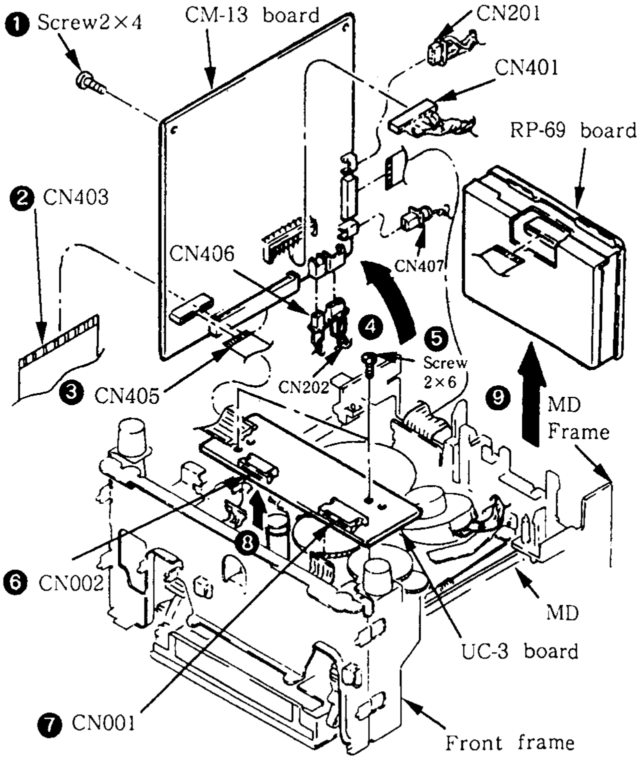

❶ Screw2×4
CM-13 board
CN201
CN401
RP-69 board
❷ CN403
CN406
CN407
❹
❺ Screw 2×6
❸ CN405
CN202
❾
MD Frame
❽
❻ CN002
MD
UC-3 board
❼ CN001
Front frame

Fig. 3-7.

3-8. REMOVAL OF RP-69 BOARD, FLEXIBLE BOARD

1) Remove the screw in Fig. 3-8 Ⓐ
2) Pull out two claws of MD frame in Fig. 3-8 Ⓑ.
3) Move the slider Ⓒ of CN001 on RP-69 board in the direction of the arrow Ⓓ.
4) Remove FLEXIBLE boards.

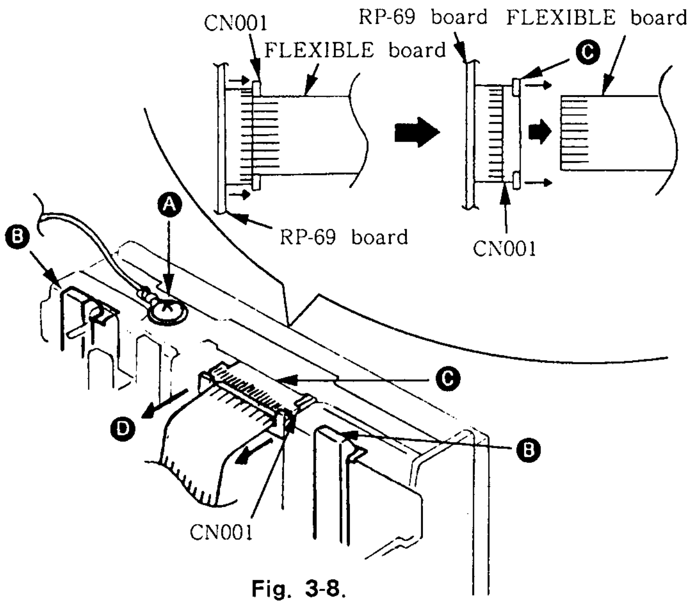

CN001
FLEXIBLE board
RP-69 board
RP-69 board
FLEXIBLE board
Ⓒ
RP-69 board
CN001
Ⓐ
Ⓑ
Ⓒ
Ⓓ
Ⓑ
CN001

Fig. 3-8.

3-10. REMOVAL OF MD, CASSETTE COMPARTMENT BLOCK

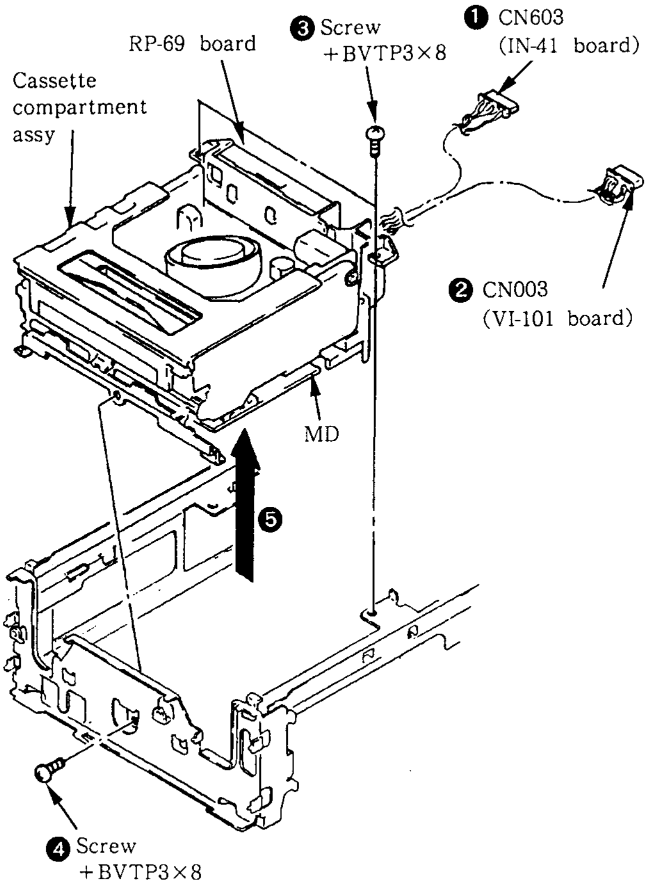

RP-69 board
❸ Screw +BVTP3×8
❶ CN603 (IN-41 board)
Cassette compartment assy
❷ CN003 (VI-101 board)
MD
❺
❹ Screw +BVTP3×8

Fig. 3-10.

3-9. REMOVAL OF PI-24 BOARD AND RM-44 BOARD AND REAR FRAME, MODULATOR

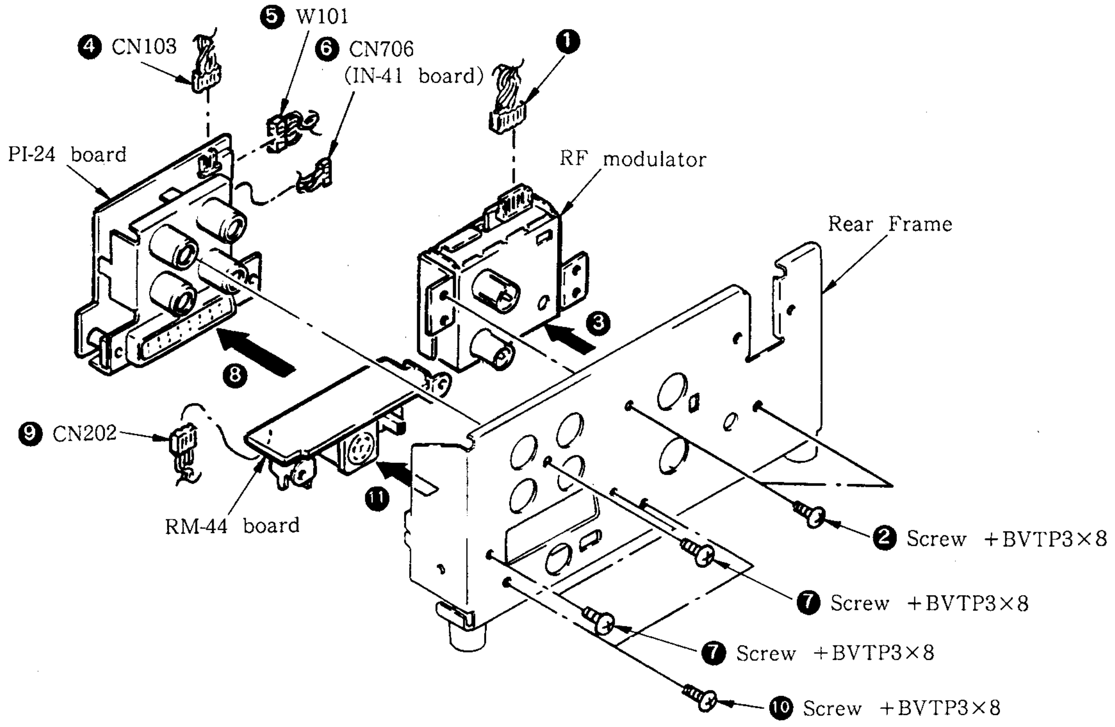

❺ W101
❹ CN103
❻ CN706 (IN-41 board)
❶
PI-24 board
RF modulator
Rear Frame
❸
❽
❾ CN202
⓫
RM-44 board
❷ Screw +BVTP3×8
❼ Screw +BVTP3×8
❼ Screw +BVTP3×8
❿ Screw +BVTP3×8

Fig. 3-9.

3-11. REMOVAL OF MD SECTION

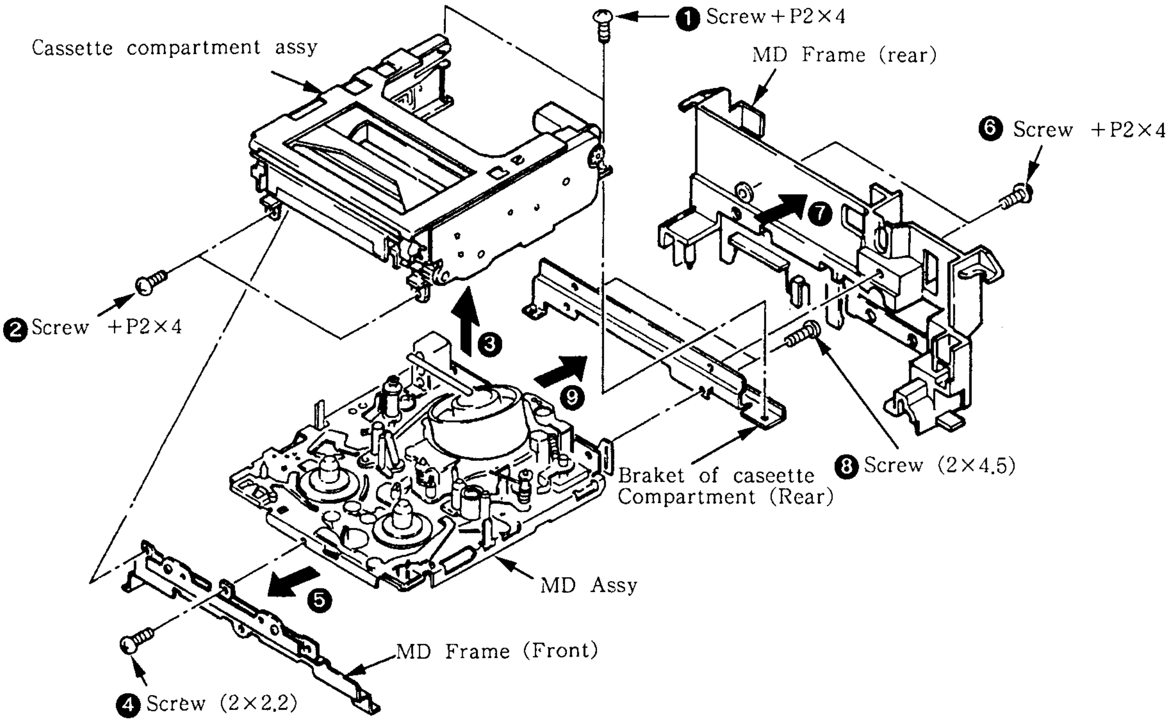

❶ Screw + P2×4
Cassette compartment assy
MD Frame (rear)
❻ Screw +P2×4
❼
❷ Screw +P2×4
❸
❾
Braket of caseette
Compartment (Rear)
❽ Screw (2×4.5)
MD Assy
❺
MD Frame (Front)
❹ Screw (2×2.2)

Fig. 3-11.

3-12. NOTES FOR CASSETTE COMPARTMENT ASSY INSTALLATION

1. After installing the cassette compartment ass'y onto the MD block ass'y, look from the front panel and check if the tab of the eject lever (MD block ass'y) is properly latched onto the rear of the knob of the lock slider (cassette compartment ass'y). See Fig. 3-12.
2. If the tab is latched on the reverse, use the tip of a screwdriver to lightly push the eject lever. Then install the cassette compartment ass'y.

Notes

1. When the MD block ass'y is not in the STOP position, the eject lever might not be able to move.
2. If the cassette compartment is not properly installed on the MD block ass'y (improper latching between the cassette compartment ass'y's lock slider and the MD block ass'y's eject lever) and the unit's AC plug is inserted into a power outlet, the cassette door and holder will operate repeatedly regardless of the ON/OFF setting of the power switch. The cassette will not be loaded even when it is inserted.

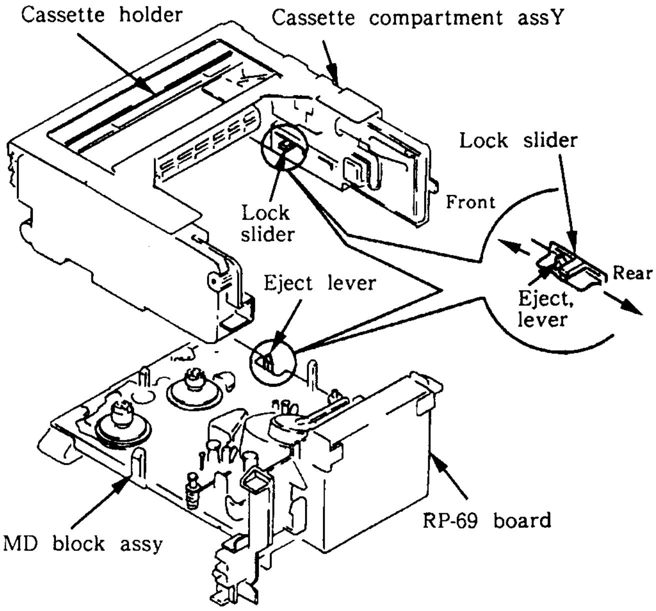
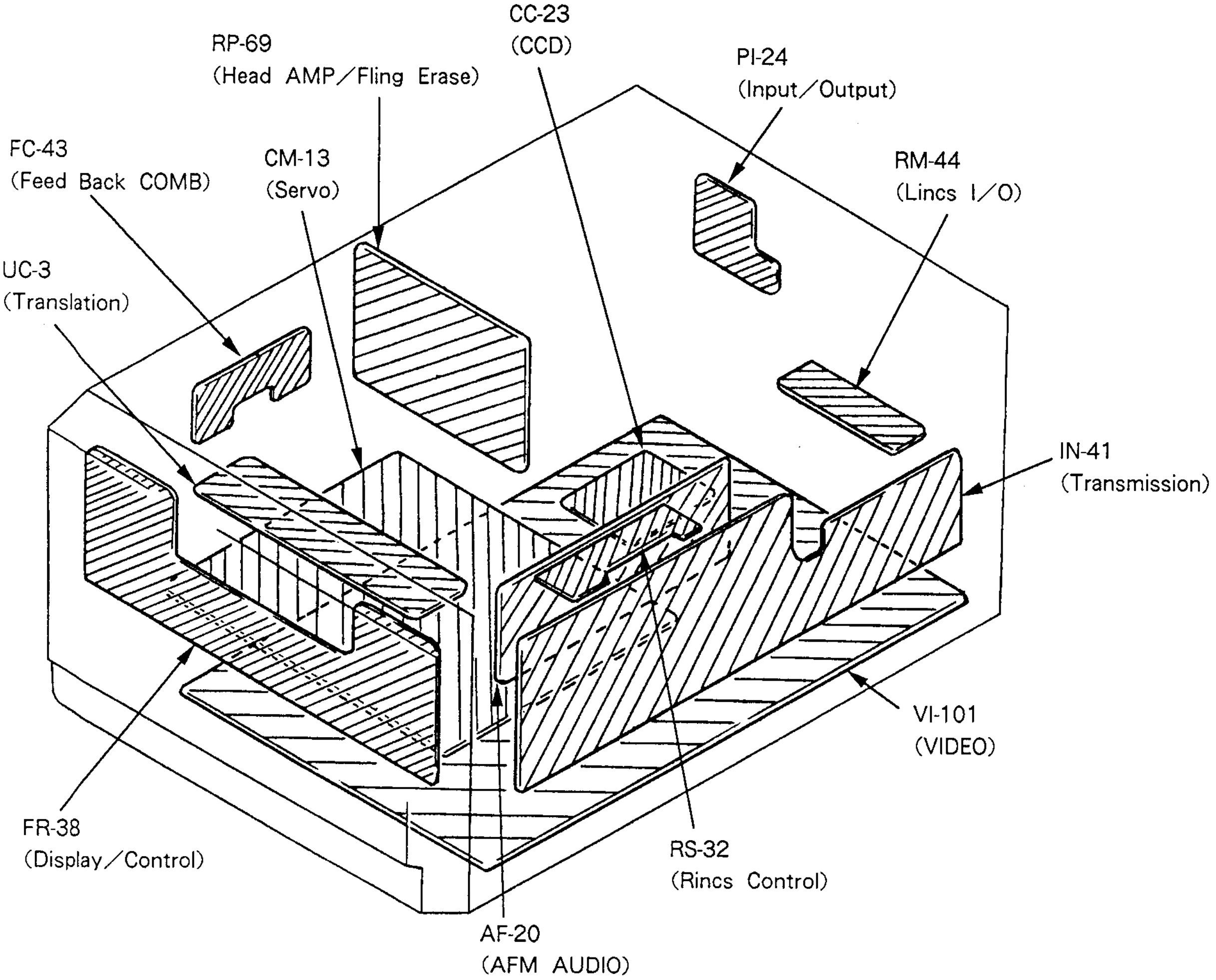

Cassette holder
Cassette compartment assY
Lock slider
Front
Lock slider
Rear
Eject lever
Eject, lever
MD block assy
RP-69 board

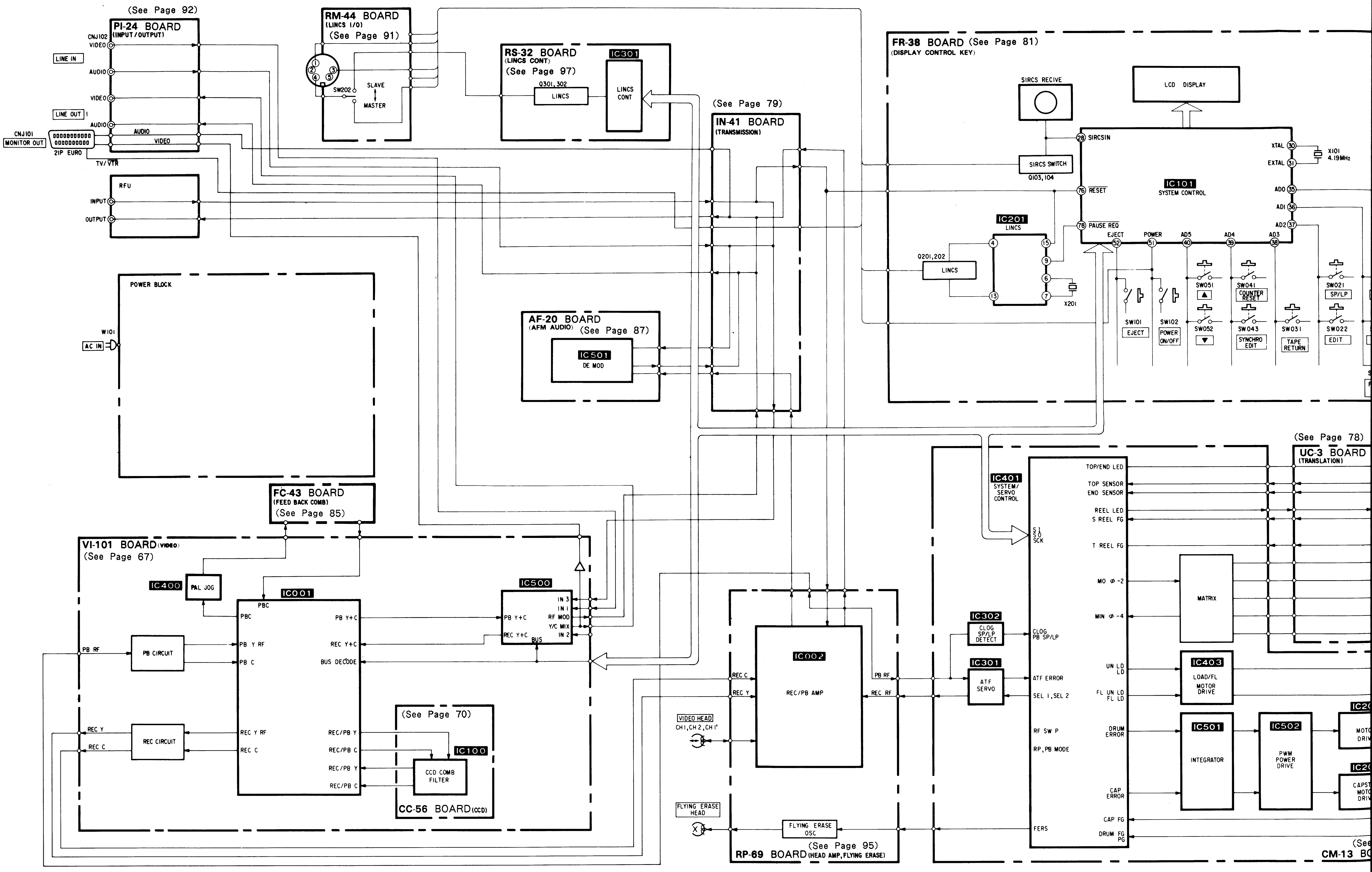
Fig. 3-12.

SECTION 4
DIAGRAMS

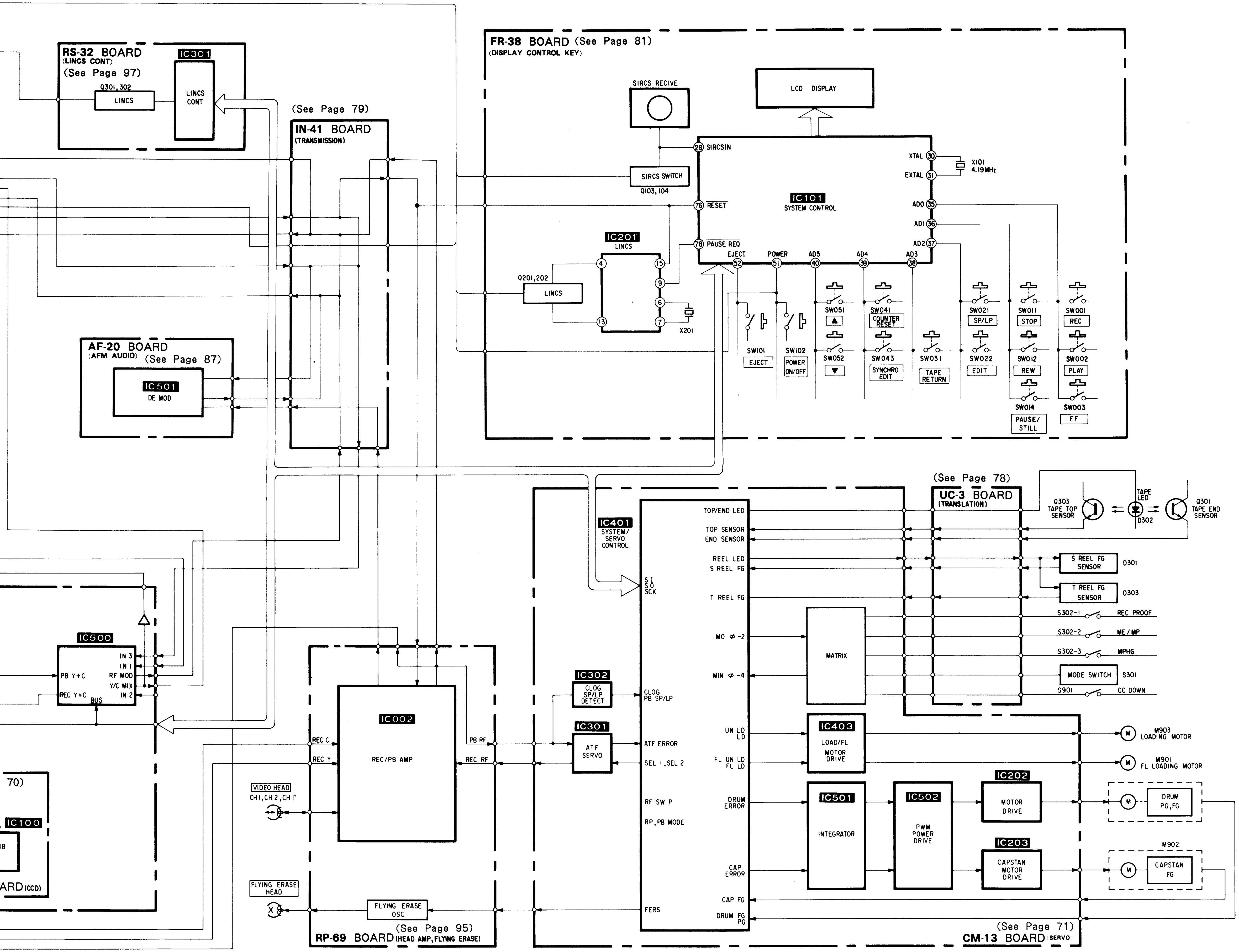
4-1. CIRCUIT BOARDS LOCATION


CC-23
(CCD)
RP-69
(Head AMP/Fling Erase)
PI-24
(Input/Output)
FC-43
(Feed Back COMB)
CM-13
(Servo)
RM-44
(Lincs I/O)
UC-3
(Translation)
IN-41
(Transmission)
VI-101
(VIDEO)
FR-38
(Display/Control)
RS-32
(Rincs Control)
AF-20
(AFM AUDIO)

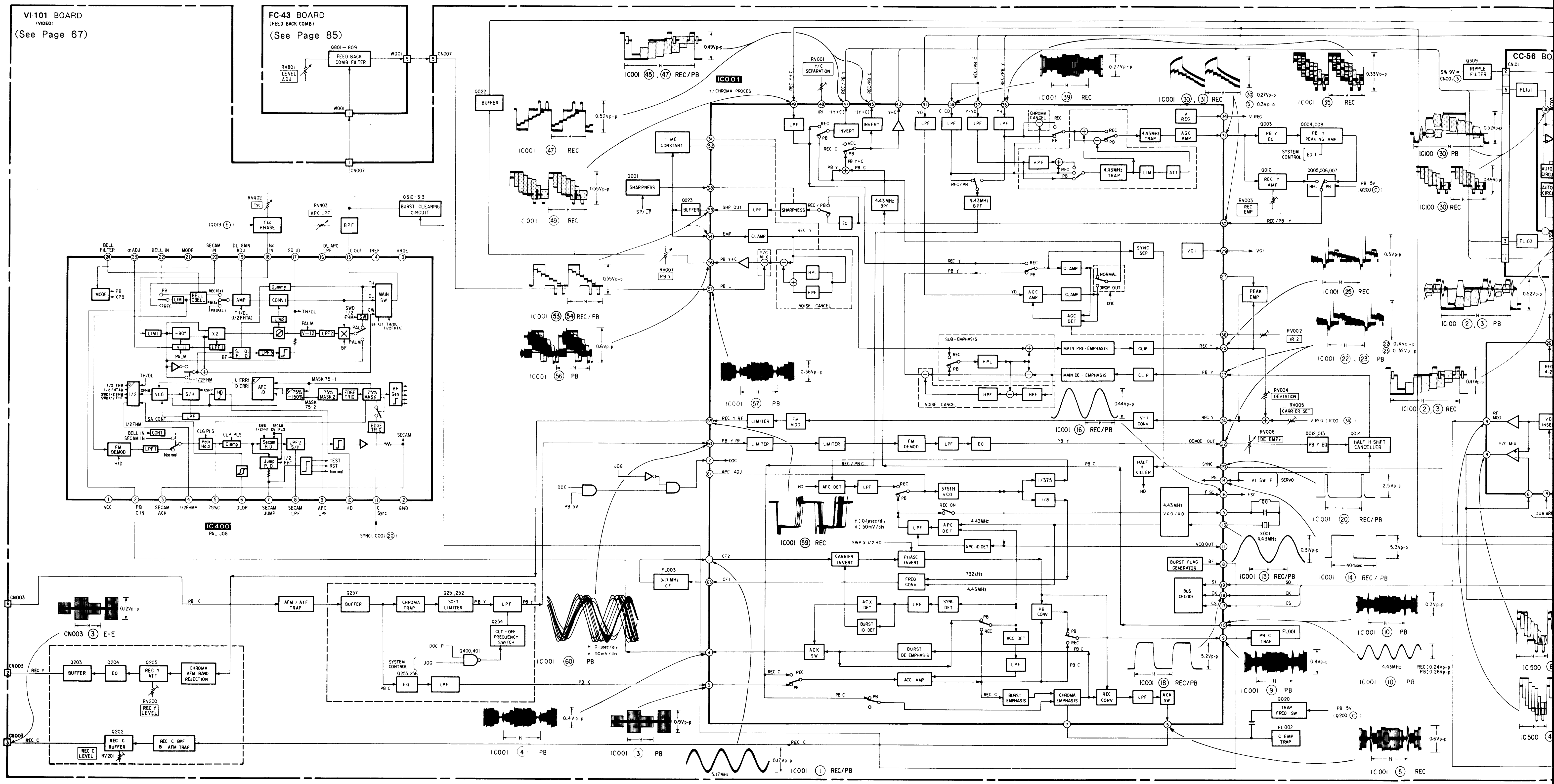
4-2. OVERALL BLOCK DIAGRAM

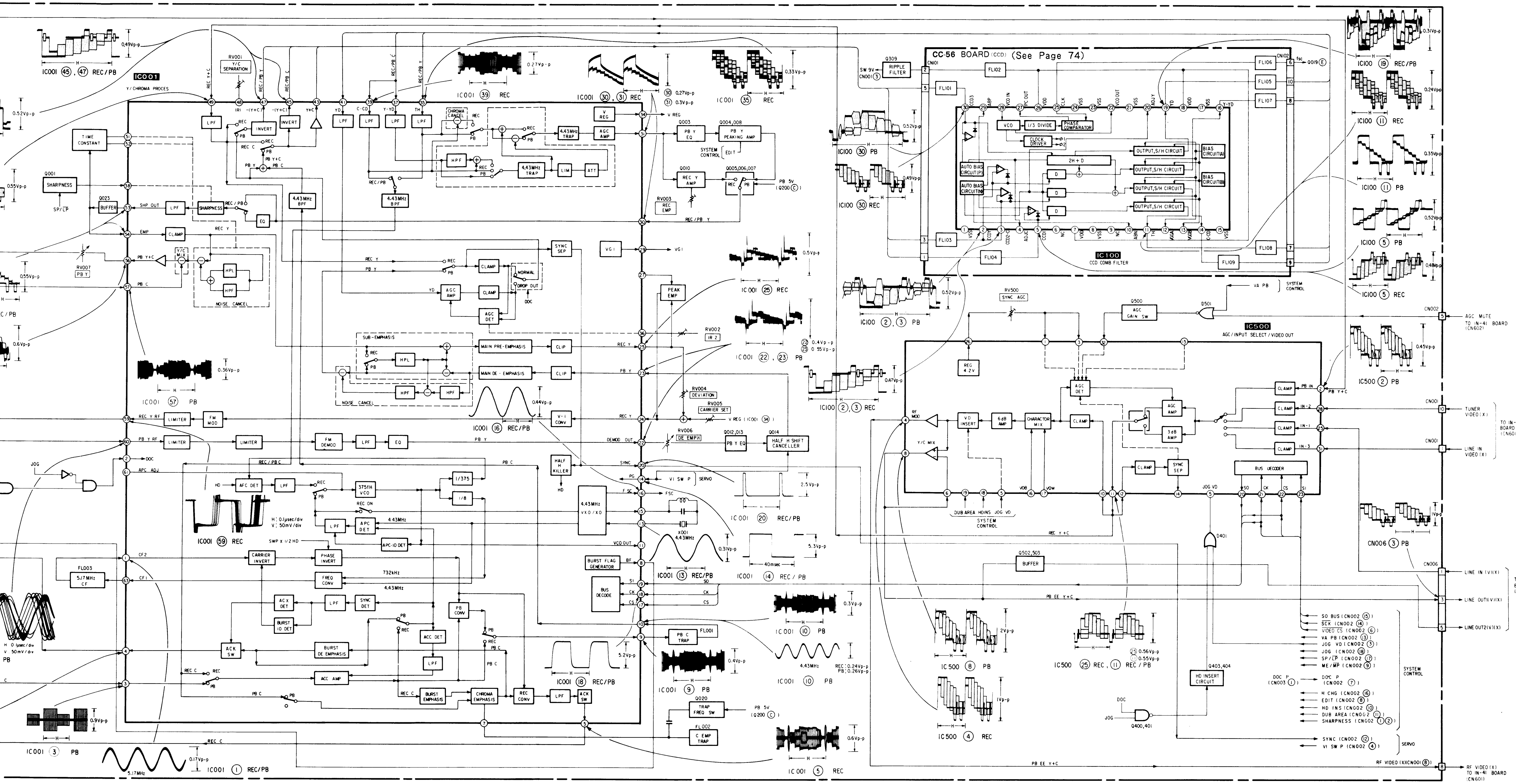


(See Page 92)
PI-24 BOARD
(INPUT/OUTPUT)
CNJ102
VIDEO
LINE IN
AUDIO
VIDEO
LINE OUT 1
AUDIO
CNJ101
MONITOR OUT
21P EURO
TV/VTR
AUDIO
VIDEO
RFU
INPUT
OUTPUT
RM-44 BOARD
(LINCS I/O)
(See Page 91)
SW202
SLAVE
MASTER
RS-32 BOARD
(LINCS CONT)
(See Page 97)
IC301
Q301, 302
LINCS
LINCS CONT
(See Page 79)
IN-41 BOARD
(TRANSMISSION)
POWER BLOCK
W101
AC IN
AF-20 BOARD
(AFM AUDIO)
(See Page 87)
IC501
DE MOD
FC-43 BOARD
(FEED BACK COMB)
(See Page 85)
VI-101 BOARD (VIDEO)
(See Page 67)
IC400
PAL JOG
IC001
PBC
PBC
PB Y+C
PB RF
PB CIRCUIT
PB Y RF
REC Y+C
PB C
BUS DECODE
REC Y
REC C
REC CIRCUIT
REC Y RF
REC C
REC/PB Y
REC/PB C
REC/PB Y
REC/PB C
IC500
IN 3
IN 1
PB Y+C
RF MOD
Y/C MIX
REC Y+C
IN 2
BUS
(See Page 70)
IC100
CCD COMB FILTER
CC-56 BOARD (CCD)
FR-38 BOARD (See Page 81)
(DISPLAY CONTROL KEY)
SIRCS RECIVE
LCD DISPLAY
SIRCS SWITCH
Q103, 104
SIRCSIN
RESET
PAUSE REQ
IC101
SYSTEM CONTROL
XTAL
EXTAL
X101
4.19MHz
AD0
AD1
AD2
EJECT
POWER
AD5
AD4
AD3
IC201
LINCS
Q201, 202
LINCS
X201
SW101
EJECT
SW102
POWER ON/OFF
SW051
▲
SW052
▼
SW041
COUNTER RESET
SW043
SYNCHRO EDIT
SW031
TAPE RETURN
SW021
SP/LP
SW022
EDIT
(See Page 78)
UC-3 BOARD
(TRANSLATION)
IC401
SYSTEM/SERVO CONTROL
TOP/END LED
TOP SENSOR
END SENSOR
REEL LED
S REEL FG
SI
SO
SCK
T REEL FG
MO Φ-2
MATRIX
MIN Φ-4
IC302
CLOG SP/LP DETECT
CLOG
PB SP/LP
IC301
ATF SERVO
ATF ERROR
SEL 1, SEL 2
UN LD
LD
FL UN LD
FL LD
IC403
LOAD/FL MOTOR DRIVE
RF SW P
RP, PB MODE
DRUM ERROR
IC501
INTEGRATOR
IC502
PWM POWER DRIVE
CAP ERROR
CAP FG
DRUM FG
PG
FERS
IC002
REC/PB AMP
REC C
REC Y
PB RF
REC RF
VIDEO HEAD
CH1, CH2, CH1'
FLYING ERASE HEAD
FLYING ERASE OSC
(See Page 95)
RP-69 BOARD (HEAD AMP, FLYING ERASE)
CM-13 B


RS-32 BOARD
(LINCS CONT)
(See Page 97)
Q301, 302
LINCS
IC301
LINCS CONT
(See Page 79)
IN-41 BOARD
(TRANSMISSION)
AF-20 BOARD
(AFM AUDIO) (See Page 87)
IC501
DE MOD
FR-38 BOARD (See Page 81)
(DISPLAY CONTROL KEY)
SIRCS RECIVE
LCD DISPLAY
SIRCS SWITCH
Q103, 104
28 SIRCSIN
76 RESET
78 PAUSE REQ
IC101
SYSTEM CONTROL
XTAL 30
EXTAL 31
X101
4.19MHz
AD0 35
AD1 36
AD2 37
EJECT 52
POWER 51
AD5 40
AD4 39
AD3 38
IC201
LINCS
Q201,202
LINCS
4
13
15
9
6
7
X201
SW101
EJECT
SW102
POWER ON/OFF
SW051
▲
SW052
▼
SW041
COUNTER RESET
SW043
SYNCHRO EDIT
SW031
TAPE RETURN
SW021
SP/LP
SW022
EDIT
SW011
STOP
SW012
REW
SW014
PAUSE/STILL
SW001
REC
SW002
PLAY
SW003
FF
(See Page 78)
UC-3 BOARD
(TRANSLATION)
Q303
TAPE TOP SENSOR
TAPE LED
D302
Q301
TAPE END SENSOR
IC401
SYSTEM/SERVO CONTROL
SI
SO
SCK
TOP/END LED
TOP SENSOR
END SENSOR
REEL LED
S REEL FG
T REEL FG
MO φ -2
MIN φ -4
CLOG
PB SP/LP
ATF ERROR
SEL 1, SEL 2
RF SW P
RP, PB MODE
FERS
UN LD
LD
FL UN LD
FL LD
DRUM ERROR
CAP ERROR
CAP FG
DRUM FG
PG
S REEL FG SENSOR
D301
T REEL FG SENSOR
D303
S302-1
REC PROOF
S302-2
ME / MP
S302-3
MPHG
MATRIX
MODE SWITCH
S301
S901
CC DOWN
IC403
LOAD/FL MOTOR DRIVE
M903
LOADING MOTOR
M901
FL LOADING MOTOR
IC501
INTEGRATOR
IC502
PWM POWER DRIVE
IC202
MOTOR DRIVE
IC203
CAPSTAN MOTOR DRIVE
DRUM
PG, FG
M902
CAPSTAN
FG
(See Page 71)
CM-13 BOARD SERVO
IC302
CLOG SP/LP DETECT
IC301
ATF SERVO
IC002
REC/PB AMP
REC C
REC Y
PB RF
REC RF
VIDEO HEAD
CH1, CH2, CH1'
FLYING ERASE HEAD
FLYING ERASE OSC
(See Page 95)
RP-69 BOARD (HEAD AMP, FLYING ERASE)
IC500
IN 3
IN 1
RF MOD
Y/C MIX
IN 2
PB Y+C
REC Y+C
BUS
70)
IC100
ARD (CCD)

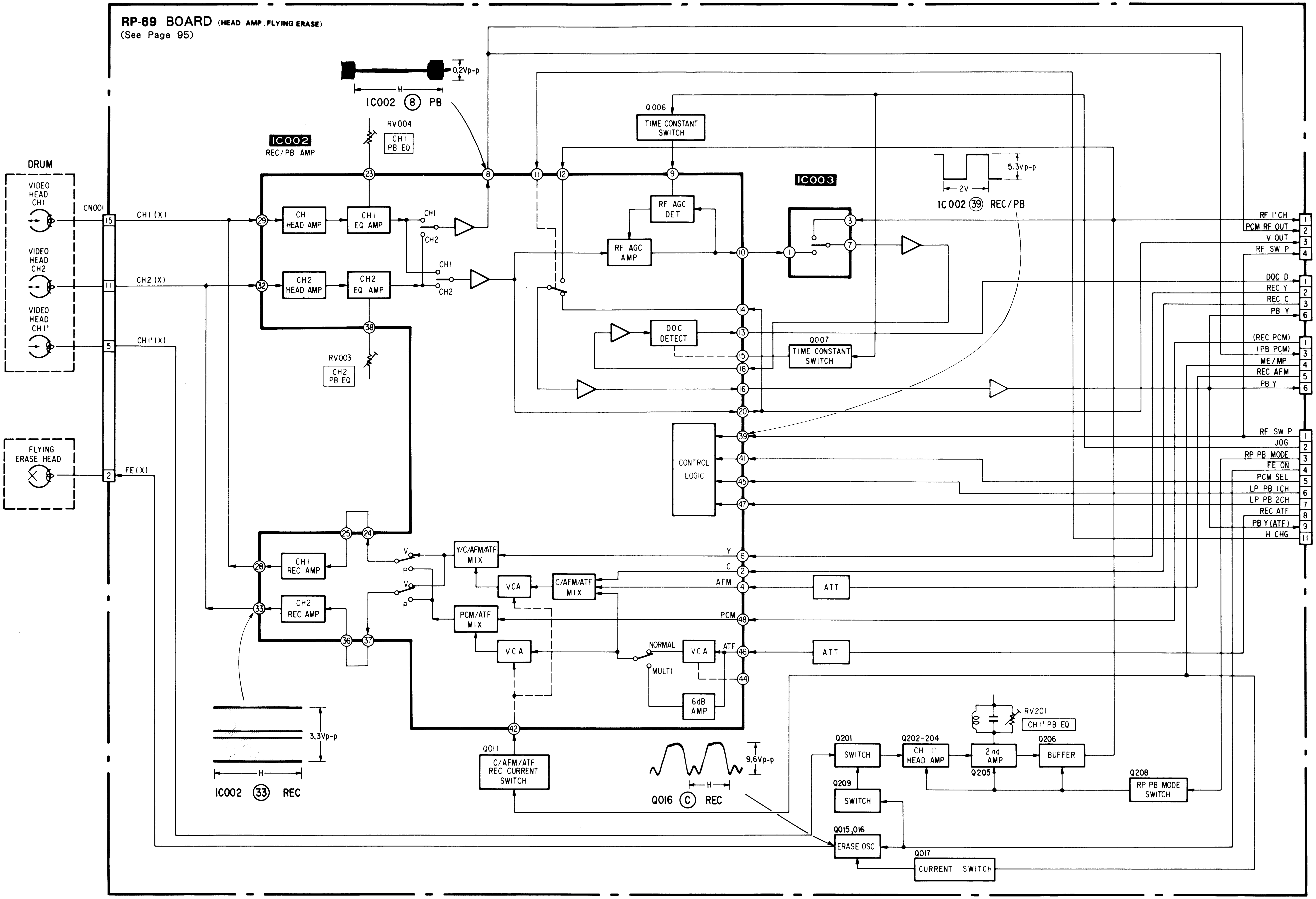
4-3. VIDEO BLOCK DIAGRAM

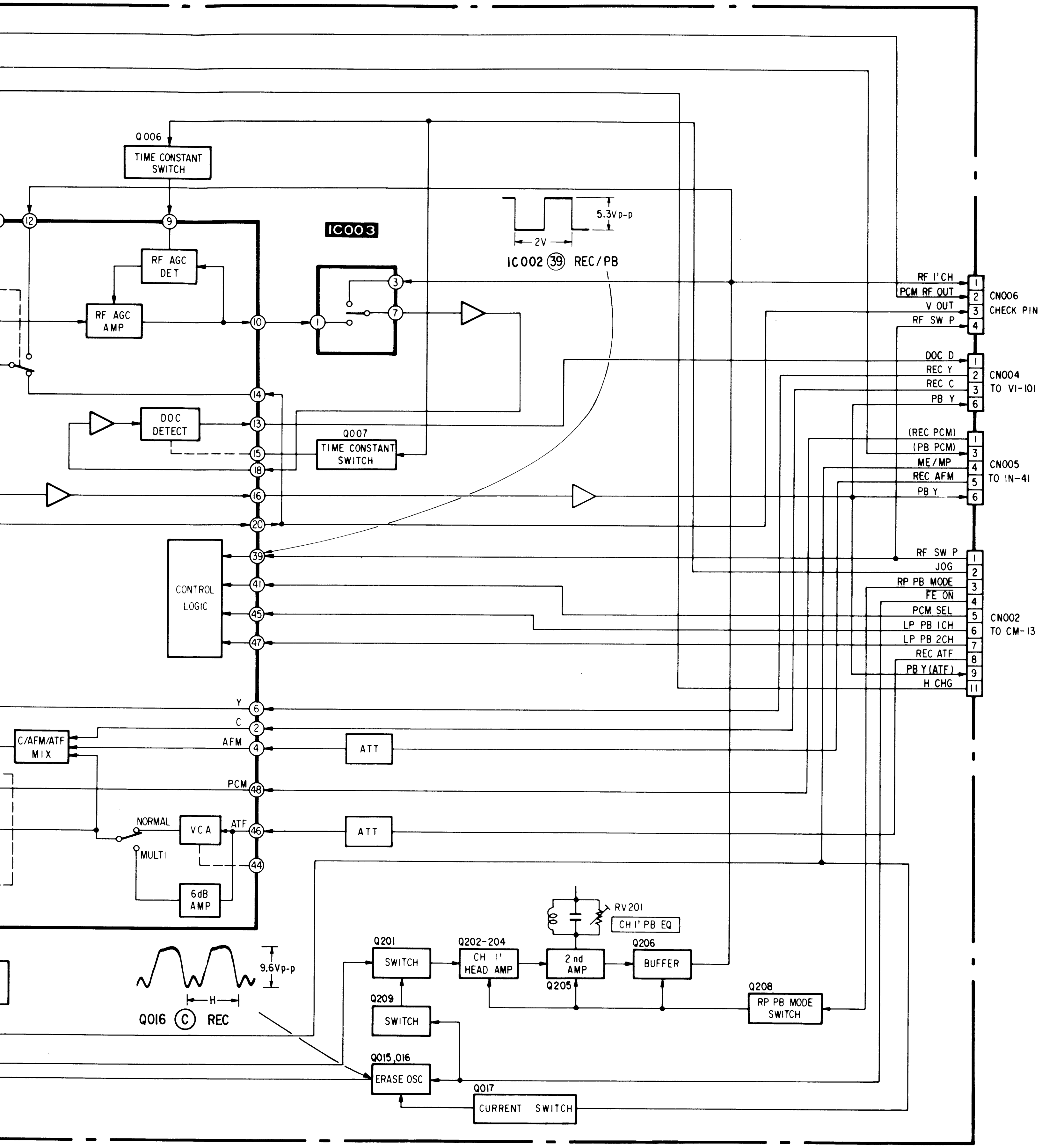

VI-101 BOARD
(VIDEO)
(See Page 67)
FC-43 BOARD
(FEED BACK COMB)
(See Page 85)
Q801 - 809
FEED BACK COMB FILTER
RV801 LEVEL ADJ
W001
CN007
BPF
Q310 - 313
BURST CLEANING CIRCUIT
RV402 fsc
RV403 APC LPF
fsc PHASE
BELL FILTER
φADJ
BELL IN
MODE
SECAM IN
DL GAIN ADJ
fsc IN
SQ ID
DL APC LPF
C OUT
IREF
VRGE
MAIN SW
Dummy
CONV1
AMP
LIM1
LIM2
-90°
X2
VCO
S/H
AFC ID
MASK 75-1
MASK 75-2
EDGE TRIG
BF Gen
FM DEMOD
Peak Hold
Clamp
Secam P.D.
LPF2 S/H
Jump P.D.
VCC
PB C IN
SECAM ACK
1/2FHMP
75%C
DLDP
SECAM JUMP
SECAM LPF
AFC LPF
HD
C Sync
GND
IC400
PAL JOG
SYNC(IC001 ⑳)
Q022 BUFFER
IC001
Y/CHROMA PROCES
TIME CONSTANT
Q001 SHARPNESS
SP/LP
Q023 BUFFER
SHARPNESS
EQ
CLAMP
Y/C MIX
HPL
HPF
NOISE CANCEL
RV007 PB Y
RV001 Y/C SEPARATION
INVERT
4.43MHz BPF
CHROMA CANCEL
4.43MHz TRAP
AGC AMP
V REG
LIM
ATT
Q003 PB Y EQ
Q004,008 PB Y PEAKING AMP
SYSTEM CONTROL
EDIT
Q010 REC Y AMP
Q005,006,007
PB 5V (Q200 ©)
RV003 REC EMP
SYNC SEP
VG1
PEAK EMP
AGC DET
NORMAL
DROP OUT
DOC
SUB-EMPHASIS
MAIN PRE-EMPHASIS
MAIN DE-EMPHASIS
CLIP
RV002 IR 2
RV004 DEVIATION
RV005 CARRIER SET
V-I CONV
LIMITER
FM MOD
FM DEMOD
RV006 DE EMPH
Q012,013 PB Y EQ
Q014 HALF H SHIFT CANCELLER
HALF H KILLER
AFC DET
375fH VCO
1/375
1/8
APC DET
APC-ID DET
4.43MHz VXO/XO
X001 4.43MHz
BURST FLAG GENERATOR
BUS DECODE
FL003 5.17MHz CF
CARRIER INVERT
PHASE INVERT
FREQ CONV
ACK DET
BURST ID DET
SYNC DET
ACK SW
BURST DE EMPHASIS
ACC DET
PB CONV
ACC AMP
BURST EMPHASIS
CHROMA EMPHASIS
REC CONV
FL001
PB C TRAP
Q020 TRAP FREQ SW
FL002 C EMP TRAP
CC-56 BO
Q309 RIPPLE FILTER
SW 9V CN001 ③
FL101
FL103
AFM / ATF TRAP
Q257 BUFFER
CHROMA TRAP
Q251,252 SOFT LIMITER
Q254 CUT-OFF FREQUENCY SWITCH
Q400,401
DOC P
JOG
Q255,256 EQ
CN003
CN003 ③ E-E
Q203 BUFFER
Q204 EQ
Q205 REC Y ATT
CHROMA AFM BAND REJECTION
RV200 REC Y LEVEL
Q202 REC C BUFFER
REC C BPF & AFM TRAP
REC C LEVEL RV201
IC001 ㊺, ㊼ REC/PB
IC001 ㊼ REC
IC001 ㊾ REC
IC001 ㊸, ㊹ REC/PB
IC001 ㊺ PB
IC001 ㊻ PB
IC001 ㊾ REC
IC001 ⑥⓪ PB
IC001 ④ PB
IC001 ③ PB
IC001 ① REC/PB
IC001 ㊴ REC
IC001 ㉚, ㉛ REC
IC001 ㉟ REC
IC001 ㉕ REC
IC001 ㉒, ㉓ PB
IC001 ⑯ REC/PB
IC001 ⑱ REC/PB
IC001 ⑳ REC/PB
IC001 ⑬ REC/PB
IC001 ⑭ REC / PB
IC001 ⑩ PB
IC001 ⑨ PB
IC001 ⑤ REC
IC100 ㉚ PB
IC100 ②, ③ PB
IC100 ②③ REC
IC 500
0.49Vp-p
0.52Vp-p
0.55Vp-p
0.6Vp-p
0.36Vp-p
0.27Vp-p
0.33Vp-p
0.5Vp-p
0.44Vp-p
2.5Vp-p
5.3Vp-p
0.31Vp-p
5.2Vp-p
0.4Vp-p
0.9Vp-p
0.17Vp-p
0.12Vp-p
0.6Vp-p
H: 0.1μsec/div
V: 50mV/div
40msec
4.43MHz
5.17MHz
732kHz



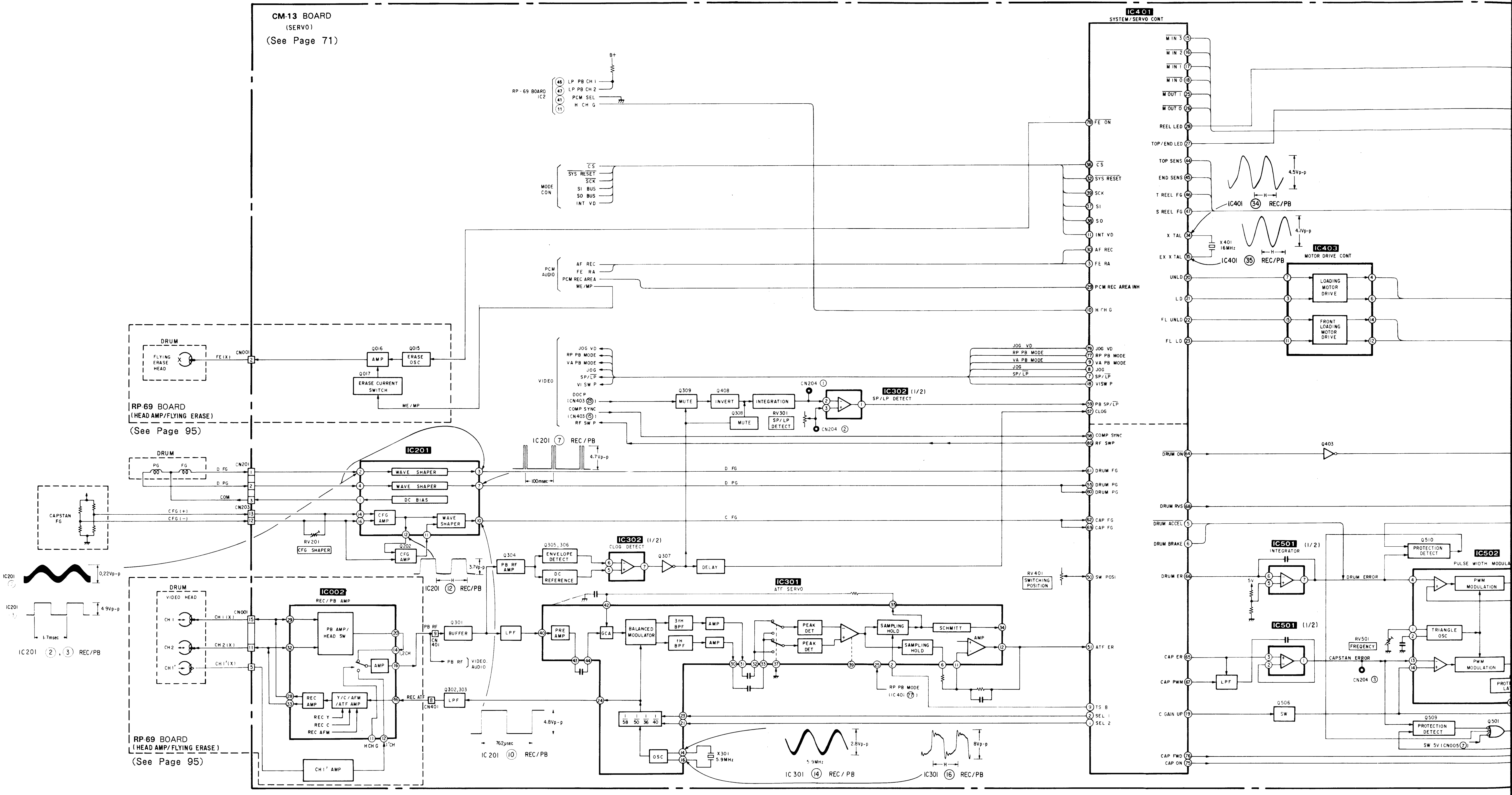
IC001
Y/CHROMA PROCES
IC001 ㊺, ㊼ REC/PB
0.49Vp-p
RV001 Y/C SEPARATION
TIME CONSTANT
Q001 SHARPNESS
SP/LP
Q023 BUFFER
SHP OUT
LPF
SHARPNESS
EQ
CLAMP
RV007 PB Y
Y/C MIX
NOISE CANCEL
HPL
HPF
INVERT
4.43MHz BPF
CHROMA CANCEL
4.43MHz TRAP
LIM
ATT
V REG
AGC AMP
Q003 PB Y EQ
Q004,008 PB Y PEAKING AMP
SYSTEM CONTROL
EDIT
Q010 REC Y AMP
Q005,006,007
PB 5V (Q200 Ⓒ)
RV003 REC EMP
IC001 ㊴ REC
0.27Vp-p
IC001 ㉚, ㉛ REC
㉚ 0.27Vp-p
㉛ 0.3Vp-p
IC001 ㉟ REC
0.33Vp-p
SYNC SEP
VG I
NORMAL
DROP OUT
DOC
AGC DET
PEAK EMP
SUB-EMPHASIS
MAIN PRE-EMPHASIS
MAIN DE-EMPHASIS
CLIP
RV002 IR 2
RV004 DEVIATION
RV005 CARRIER SET
V REG (IC001 ㉞)
IC001 ㉕ REC
IC001 ㉒, ㉓ PB
㉒ 0.4Vp-p
㉓ 0.55Vp-p
IC001 ㊼ PB
0.36Vp-p
IC001 ⑯ REC/PB
0.44Vp-p
V-I CONV
LIMITER
FM MOD
FM DEMOD
RV006 DE EMPH
Q012,013 PB Y EQ
Q014 HALF H SHIFT CANCELLER
HALF H KILLER
JOG
AFC DET
375fH VCO
1/375
1/8
4.43MHz VXO/XO
X001 4.43MHz
IC001 ㊾ REC
H: 0.1μsec/div
V: 50mV/div
APC DET
APC-ID DET
CARRIER INVERT
PHASE INVERT
FREQ CONV
732kHz
4.43MHz
FL003 5.17MHz CF
ACK DET
BURST ID DET
SYNC DET
PB CONV
ACC DET
ACK SW
BURST DE EMPHASIS
ACC AMP
BURST EMPHASIS
CHROMA EMPHASIS
REC CONV
BURST FLAG GENERATOR
BUS DECODE
IC001 ⑬ REC/PB
0.31Vp-p
IC001 ⑳ REC/PB
2.5Vp-p
IC001 ⑭ REC/PB
5.3Vp-p
40msec
IC001 ⑩ PB
0.3Vp-p
4.43MHz
REC: 0.24Vp-p
PB: 0.26Vp-p
IC001 ⑩ PB
IC001 ⑱ REC/PB
5.2Vp-p
IC001 ⑨ PB
0.4Vp-p
FL001 PB C TRAP
Q020 TRAP FREQ SW
FL002 C EMP TRAP
PB 5V (Q200 Ⓒ)
IC001 ⑤ REC
0.6Vp-p
IC001 ③ PB
0.9Vp-p
IC001 ① REC/PB
0.17Vp-p
5.17MHz
Q309 RIPPLE FILTER
SW 9V CN001 ③
CC-56 BOARD (CCD) (See Page 74)
CN101
CN102
FL101
FL102
FL103
FL104
FL105
FL106
FL107
FL108
FL109
fsc Q019 Ⓔ
VCO
1/3 DIVIDE
PHASE COMPARATOR
CLOCK DRIVER
2H + D
D
AUTO BIAS CIRCUIT(P)
AUTO BIAS CIRCUIT(N)
OUTPUT,S/H CIRCUIT
BIAS CIRCUIT(A)
BIAS CIRCUIT(B)
IC100
CCD COMB FILTER
IC100 ㉚ PB
0.52Vp-p
IC100 ㉚ REC
0.49Vp-p
IC100 ②, ③ PB
0.52Vp-p
IC100 ②, ③ REC
0.47Vp-p
IC100 ⑲ REC/PB
0.31Vp-p
IC100 ⑪ REC
0.24Vp-p
IC100 ⑪ PB
0.35Vp-p
IC100 ⑤ PB
0.52Vp-p
IC100 ⑤ REC
0.48Vp-p
RV500 SYNC AGC
Q500 AGC GAIN SW
D501
VA PB
SYSTEM CONTROL
IC500
AGC/INPUT SELECT/VIDEO OUT
REG 4.2V
AGC DET
AGC AMP
3dB AMP
VD INSERT
6dB AMP
CHARACTOR MIX
CLAMP
SYNC SEP
BUS DECODER
RF MOD
Y/C MIX
DUB AREA HDINS JOG VD
IC500 ② PB
0.45Vp-p
CN002
AGC MUTE TO IN-41 BOARD (CN602)
CN001
TUNER VIDEO (X)
TO IN-41 BOARD (CN601)
LINE IN VIDEO (X)
CN006 ③ PB
1Vp-p
CN006
LINE IN (V)(X)
LINE OUT(V)(X)
LINE OUT2(V)(X)
TO PI-24 BOARD (W301)
Q502,503 BUFFER
PB EE Y+C
REC Y+C
D401
Q403,404 HD INSERT CIRCUIT
Q400,401
IC500 ⑧ PB
2Vp-p
IC500 ㉕ REC, ⑪ REC/PB
㉕ 0.56Vp-p
⑪ 0.55Vp-p
IC500 ④ REC
1Vp-p
SO BUS (CN002 ⑤)
SCK (CN002 ⑭)
VIDEO CS (CN002 ⑥)
VA PB (CN002 ③)
JOG VD (CN002 ③)
JOG (CN002 ⑱)
SP/LP (CN002 ⑦)
ME/MP (CN002 ⑨)
DOC P (CN003 ①)
(CN002 ⑦)
H CHG (CN002 ⑥)
EDIT (CN002 ⑧)
HD INS (CN002 ⑩)
DUB AREA (CN002 ⑪)
SHARPNESS (CN002 ①②)
SYSTEM CONTROL
SYNC (CN002 ⑫)
VI SW P (CN002 ④)
SERVO
RF VIDEO (X)(CN001 ⑧)
RF VIDEO (X) TO IN-41 BOARD (CN601)

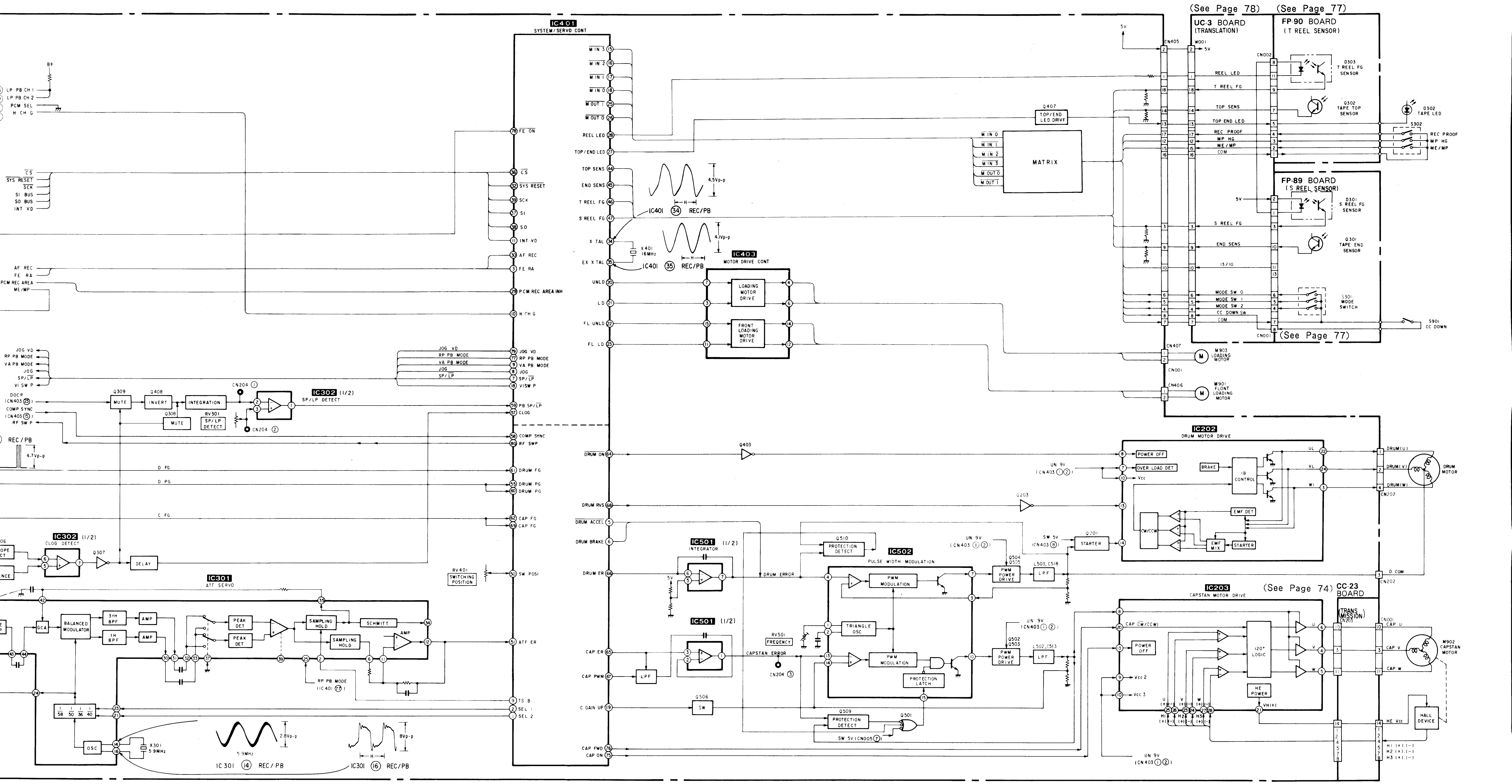
4-4. HEAD AMP BLOCK DIAGRAM


RP-69 BOARD (HEAD AMP, FLYING ERASE)
(See Page 95)
DRUM
VIDEO HEAD CH1
VIDEO HEAD CH2
VIDEO HEAD CH1'
FLYING ERASE HEAD
CN001
CH1 (X)
CH2 (X)
CH1' (X)
FE (X)
IC002
REC/PB AMP
0.2Vp-p
H
IC002 ⑧ PB
RV004
CH1 PB EQ
RV003
CH2 PB EQ
CH1 HEAD AMP
CH1 EQ AMP
CH2 HEAD AMP
CH2 EQ AMP
CH1
CH2
Q006
TIME CONSTANT SWITCH
RF AGC DET
RF AGC AMP
IC003
5.3Vp-p
2V
IC002 ㊴ REC/PB
DOC DETECT
Q007
TIME CONSTANT SWITCH
CONTROL LOGIC
CH1 REC AMP
CH2 REC AMP
V
P
Y/C/AFM/ATF MIX
VCA
C/AFM/ATF MIX
PCM/ATF MIX
NORMAL
MULTI
6dB AMP
ATT
Y
C
AFM
PCM
ATF
3.3Vp-p
IC002 ㉝ REC
Q011
C/AFM/ATF REC CURRENT SWITCH
9.6Vp-p
Q016 Ⓒ REC
RV201
CH1' PB EQ
Q201
SWITCH
Q202-204
CH 1' HEAD AMP
2nd AMP
Q205
Q206
BUFFER
Q209
SWITCH
Q015,016
ERASE OSC
Q017
CURRENT SWITCH
Q208
RP PB MODE SWITCH
RF 1'CH
PCM RF OUT
V OUT
RF SW P
CN006
CHECK PIN
DOC D
REC Y
REC C
PB Y
CN004
TO VI-101
(REC PCM)
(PB PCM)
ME/MP
REC AFM
PB Y
CN005
TO IN-41
RF SW P
JOG
RP PB MODE
FE ON
PCM SEL
LP PB 1CH
LP PB 2CH
REC ATF
PB Y (ATF)
H CHG
CN002
TO CM-13


Q006
TIME CONSTANT SWITCH
IC003
5.3Vp-p
2V
IC002 (39) REC/PB
RF AGC DET
RF AGC AMP
DOC DETECT
Q007
TIME CONSTANT SWITCH
CONTROL LOGIC
C/AFM/ATF MIX
Y
C
AFM
PCM
ATF
ATT
ATT
NORMAL
MULTI
VCA
6dB AMP
RF I'CH
PCM RF OUT
V OUT
RF SW P
CN006 CHECK PIN
DOC D
REC Y
REC C
PB Y
CN004 TO VI-101
(REC PCM)
(PB PCM)
ME/MP
REC AFM
PB Y
CN005 TO IN-41
RF SW P
JOG
RP PB MODE
FE ON
PCM SEL
LP PB 1CH
LP PB 2CH
REC ATF
PB Y (ATF)
H CHG
CN002 TO CM-13
9.6Vp-p
H
Q016 (C) REC
RV201
CH1' PB EQ
Q201
SWITCH
Q202-204
CH 1' HEAD AMP
2nd AMP
Q205
Q206
BUFFER
Q208
RP PB MODE SWITCH
Q209
SWITCH
Q015,016
ERASE OSC
Q017
CURRENT SWITCH

4-5. SERVO BLOCK DIAGRAM


CM-13 BOARD
(SERVO)
(See Page 71)
RP-69 BOARD
(HEAD AMP/FLYING ERASE)
(See Page 95)
RP-69 BOARD IC2
LP PB CH 1
LP PB CH 2
PCM SEL
H CH G
B+
MODE CON
CS
SYS RESET
SCK
SI BUS
SO BUS
INT VD
PCM AUDIO
AF REC
FE RA
PCM REC AREA
ME/MP
VIDEO
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
VI SW P
DOC P
COMP SYNC
RF SW P
DRUM
FLYING ERASE HEAD
FE (X)
CN001
Q016
AMP
Q015
ERASE OSC
Q017
ERASE CURRENT SWITCH
PG
FG
D FG
D PG
COM
CN201
CN203
CAPSTAN FG
CFG (+)
CFG (−)
IC201
WAVE SHAPER
WAVE SHAPER
DC BIAS
CFG AMP
WAVE SHAPER
RV201
CFG SHAPER
Q202
CFG AMP
IC201 ⑦ REC/PB
4.7Vp-p
100msec
IC201 ⑫ REC/PB
3.7Vp-p
Q304
PB RF AMP
Q305, 306
ENVELOPE DETECT
DC REFERENCE
IC302 (1/2)
CLOG DETECT
Q307
DELAY
Q309
MUTE
Q408
INVERT
INTEGRATION
Q308
MUTE
RV301
SP/LP DETECT
CN204 ①
CN204 ②
IC302 (1/2)
SP/LP DETECT
0.22Vp-p
4.9Vp-p
1.7msec
IC201 ②, ③ REC/PB
VIDEO HEAD
CH 1
CH 2
CH 1'
CH 1 (X)
CH 2 (X)
CH 1' (X)
IC002
REC/PB AMP
PB AMP/HEAD SW
AMP
REC AMP
Y/C/AFM/ATF AMP
REC Y
REC C
REC AFM
H CH G
CH 1' AMP
PB RF
CN401
Q301
BUFFER
LPF
PB RF
VIDEO AUDIO
REC ATF
Q302, 303
LPF
4.8Vp-p
762μsec
IC201 ⑩ REC/PB
IC301
ATF SERVO
PRE AMP
GCA
BALANCED MODULATOR
3fH BPF
fH BPF
AMP
PEAK DET
SAMPLING HOLD
SCHMITT
AMP
RP PB MODE (IC401 ⑦⑦)
OSC
X301 5.9MHz
5.9MHz
2.8Vp-p
IC301 ⑭ REC/PB
8Vp-p
IC301 ⑯ REC/PB
58 50 36 40
IC401
SYSTEM/SERVO CONT
M IN 3
M IN 2
M IN 1
M IN 0
M OUT 1
M OUT 0
REEL LED
TOP/END LED
TOP SENS
END SENS
T REEL FG
S REEL FG
X TAL
EX X TAL
UNLD
LD
FL UNLD
FL LD
FE ON
CS
SYS RESET
SCK
SI
SO
INT VD
AF REC
FE RA
PCM REC AREA INH
H CH G
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
VISW P
PB SP/LP
CLOG
COMP SYNC
RF SWP
DRUM FG
DRUM PG
DRUM PG
CAP FG
CAP FG
SW POSI
ATF ER
TS B
SEL 1
SEL 2
DRUM ON
DRUM RVS
DRUM ACCEL
DRUM BRAKE
DRUM ER
CAP ER
CAP PWM
C GAIN UP
CAP FWD
CAP ON
RV401
SWITCHING POSITION
4.5Vp-p
IC401 ㉞ REC/PB
4.1Vp-p
X401 16MHz
IC401 ㉟ REC/PB
IC403
MOTOR DRIVE CONT
LOADING MOTOR DRIVE
FRONT LOADING MOTOR DRIVE
Q403
IC501 (1/2)
INTEGRATOR
5V
DRUM ERROR
IC501 (1/2)
RV501
FREQENCY
CAPSTAN ERROR
CN204 ③
LPF
Q506
SW
Q510
PROTECTION DETECT
IC502
PULSE WIDTH MODULA
PWM MODULATION
TRIANGLE OSC
PWM MODULATION
Q509
PROTECTION DETECT
Q501
SW 5V (CN005 ⑦)
D FG
D PG
C FG



(See Page 78)
(See Page 77)
UC-3 BOARD (TRANSLATION)
FP-90 BOARD (T REEL SENSOR)
FP-89 BOARD (S REEL SENSOR)
(See Page 77)
(See Page 74)
CC-23 BOARD (TRANSMISSION)
IC401 SYSTEM/SERVO CONT
IC403 MOTOR DRIVE CONT
IC202 DRUM MOTOR DRIVE
IC203 CAPSTAN MOTOR DRIVE
IC501 (1/2) INTEGRATOR
IC501 (1/2)
IC502 PULSE WIDTH MODULATION
IC301 ATF SERVO
IC302 (1/2) SP/LP DETECT
IC302 (1/2) CLOG DETECT
M IN 3
M IN 2
M IN 1
M IN 0
M OUT 1
M OUT 0
REEL LED
TOP/END LED
TOP SENS
END SENS
T REEL FG
S REEL FG
X TAL
EX X TAL
UNLD
LD
FL UNLD
FL LD
FE ON
CS
SYS RESET
SCK
SI
SO
INT VD
AF REC
FE RA
PCM REC AREA INH
H CH G
JOG VD
RP PB MODE
VA PB MODE
JOG
SP/LP
VISW P
PB SP/LP
CLOG
COMP SYNC
RF SWP
DRUM FG
DRUM PG
CAP FG
SW POSI
ATF ER
TS B
SEL 1
SEL 2
DRUM ON
DRUM RVS
DRUM ACCEL
DRUM BRAKE
DRUM ER
CAP ER
CAP PWM
C GAIN UP
CAP FWD
CAP ON
LP PB CH 1
LP PB CH 2
PCM SEL
H CH G
B+
SYS RESET
SI BUS
SO BUS
INT VD
PCM REC AREA
ME/MP
VA PB MODE
VI SW P
DOC P (CN403 ㉓)
COMP SYNC (CN403 ⑤)
RF SW P
REC/PB
4.7Vp-p
D FG
D PG
C FG
Q309 MUTE
Q408 INVERT
INTEGRATION
Q308 MUTE
RV301 SP/LP DETECT
CN204 ①
CN204 ②
Q307
DELAY
RV401 SWITCHING POSITION
BALANCED MODULATOR
GCA
3fH BPF
fH BPF
AMP
PEAK DET
SAMPLING HOLD
SCHMITT
RP PB MODE (IC401 ㊼)
OSC
X301 5.9MHz
5.9MHz
2.8Vp-p
IC301 ⑭ REC/PB
8Vp-p
IC301 ⑯ REC/PB
4.5Vp-p
IC401 ㉞ REC/PB
X401 16MHz
4.1Vp-p
IC401 ㉟ REC/PB
LOADING MOTOR DRIVE
FRONT LOADING MOTOR DRIVE
Q407 TOP/END LED DRIVE
MATRIX
CN405
W001
5V
CN002
D303 T REEL FG SENSOR
Q302 TAPE TOP SENSOR
D302 TAPE LED
S302
REC PROOF
MP HG
ME/MP
COM
TOP END LED
D301 S REEL FG SENSOR
Q301 TAPE END SENSOR
13/10
MODE SW 0
MODE SW 1
MODE SW 2
CC DOWN SW
S301 MODE SWITCH
S901 CC DOWN
CN001
CN407
M903 LOADING MOTOR
M901 FLONT LOADING MOTOR
CN406
Q403
POWER OFF
OVER LOAD DET
Vcc
UN 9V (CN403 ①②)
BRAKE
18 CONTROL
EMF DET
CW/CCW
EMF MIX
STARTER
Q203
Q201 STARTER
SW 5V (CN403 ⑧)
DRUM(U)
DRUM(V)
DRUM(W)
DRUM MOTOR
CN202
D COM
Q510 PROTECTION DETECT
DRUM ERROR
PWM MODULATION
TRIANGLE OSC
PROTECTION LATCH
Q504 Q505 PWM POWER DRIVE
L503, C518 LPF
Q502 Q503 PWM POWER DRIVE
L502, C513 LPF
RV501 FREQENCY
CAPSTAN ERROR
CN204 ③
LPF
Q506 SW
Q509 PROTECTION DETECT
Q501
SW 5V (CN005 ⑦)
CAP CW/CCW
POWER OFF
Vcc 2
Vcc 3
120° LOGIC
HE POWER
VH(+)
H1 H2 H3
CN203
CAP U
CAP V
CAP W
M902 CAPSTAN MOTOR
HE Vcc
HALL DEVICE
H1 (+),(−)
H2 (+),(−)
H3 (+),(−)

4-6. SYSTEM CONTROL-VIDEO, AUDIO BLOCK INTERFACE (CM-13 BOARD IC401)

SIGNAL	I/O	Pin No.	EJECTED	THREAD-ING	UN THREAD-ING	STOP	FF	REW	CUE	REVIEW	PB	PB・PAUSE	REC	REC・PAUSE	X2	SLOW
SEL 2	O	IC401 ① Pin	H	H	H	H	H	H	*3	*3	*2	H	*1	L	*17	*18
SEL 1	O	IC401 ② Pin	H	H	H	H	H	H	*3	*3	*2	H	*1	H	*17	*18
$\overline{\text{DRUM ON}}$	O	IC401 (64) Pin	H	L	L	H	L	L	L	L	L	L	L	L	L	L
INT VD	O	IC401 ⑪ Pin	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4	*4
SW POSI	I	IC401 ㊿ Pin	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5	*5
ATF ERROR	I	IC401 (51) Pin	*6	*6	*6	*6	*7	*7	*7	*7	*7	*7	*6	*6	*7	*7
DRUM PG	I	IC401 (55), (60) Pin	L	*8	*8	L	*8	*8	*8	*8	*8	*8	*8	*8	*8	*8
DRUM FG	I	IC401 (61) Pin	H	*9	*9	H	*9	*9	*9	*9	*9	*9	*9	*9	*9	*9
CAP FG	I	IC401 (62), (69) Pin	H/L	PULSE	PULSE	H/L	*10	*10	*10	*10	*10	H/L	*10	H/L	*10	H/L
CAP ERH	O	IC401 (65) Pin	*11	*11	*11	L	*11	*11	*11	*11	*11	L	*11	L	*11	*11
DRUM ERROR	O	IC401 (66) Pin	L	*12	*12	L	*12	*12	*12	*12	*12	*12	*12	*12	*12	*12
CAP PWM	O	IC401 (67) Pin	L	*13	*13	L	*13	*13	*13	*13	*13	L	*13	L	*13	*13
DRUM RVS	O	IC401 (68) Pin	"L"	*14	L	L	L	L	L	L	L	L	L	L	L	L
CAP ON	O	IC401 (75) Pin	L	H	H	L	H	H	H	H	H	L	H	L	H	H/L
CAP FWD	O	IC401 (76) Pin	L	L	H	L	H	L	H	L	H	H	H	L	H	H/L
RF SWP	O	IC401 (80) Pin	*16	*16	*16	"H"or "L"	*16	*16	*16	*16	*16	*16	*16	*16	*16	*16

*1. Refer to timing chart 1.
*2. Refer to timing chart 2.
*3. Refer to timing chart 3.
*4. 1V period "H" pulse.
*5. DC voltage set with RV102 (Switching position adjustment).
*6. Approx. 2.5Vdc.
*7. ATF error voltage.
*8. 2V period "H" pulse.
*9. 1.4msec period pulse.
*10. Pulses in proportion to frequency of the tape speed.
*11. Pulse output for rising or talling edges of the capstan.
*12. 6msec period PWM signal (tri-state) of "H", "L" and "HI-Z" (2.5Vdc).
*13. 64 μsec period PWM signal.
*14. Momentariy "H" when threading of full top tape.
*16. 2V period duty 50% pulse.

4-7. SYSTEM CONTROL－SERVO PEIPHERAL CIRCUIT INTERFACE (CM-13 BOARD IC401)

SIGNAL	I/O	Pin No.	STOP	FF	REW	CUE	REVIEW	PB	PB・PAUSE	REC	REC・PAUSE	X2	SLOW
LP PB 1 CH	O	CN401 ⑥ Pin	H	H	H	H	H	H	H	L	H	H	H
LP PB 2 CH	O	CN401 ⑦ Pin	H	H	H	H	H	H	H	L	H	H	H
JOG	O	IC401 ⑧ Pin	L	H	H	H	H	L	H	L	L	H	H
SP/$\overline{\text{LP}}$	O	IC401 ⑫ Pin	H/L	H/L	H/L	∗1	∗1	∗1	∗1	∗2	∗2	∗1	∗1
VA PB MODE	O	IC401 ⑭ Pin	L	L	L	H	H	H	H	L	L	H	H
SYSCON SO (SI)	O	IC401 ㊳ Pin	∗9	∗9	∗9	∗9	∗9	∗9	∗9	∗9	∗9	∗9	∗9
$\overline{\text{SYSCON SCK}}$ (SCK)	I	IC401 ㊴ Pin	∗10	∗10	∗10	∗10	∗10	∗10	∗10	∗10	∗10	∗10	∗10
CLOG	I	IC401 (57) Pin	H	∗5	∗5	∗5	∗5	∗5	H	H	H	H	H
COMP SYNC	I	IC401 (58) Pin	∗6	∗6	∗6	∗6	∗6	∗6	∗6	∗6	∗6	∗6	∗6
PB SP/$\overline{\text{LP}}$	O	IC401 (59) Pin	L	∗7	∗7	∗7	∗7	L	L	L	L	L	L
RP PB MODE	O	IC401 (77) Pin	L	L	L	H	H	H	H	L	L	H	H
$\overline{\text{FF ON}}$	O	IC401 (78) Pin	H	H	H	H	H	H	H	L	H	H	H
JOG VD	O	IC401 (79) Pin	L	L	L	∗3	∗3	L	∗3	L	L	∗3	∗3
RF SWP∗1	O	IC401 (80) Pin	1.8Vdc	∗11	∗11	∗11	∗11	∗11	∗11	∗11	∗11	∗11	∗11

∗1. According to recorded mode of playback tape.
(SP··· "H", LP··· "L")

∗2. According to SP/LP selector (S602) setting.
(SP··· "H", LP··· "L")

∗3. 1V period "H" pulse.

∗5. Non-signal "H" normal "L"

∗6. Positive compound synchronizing signal.

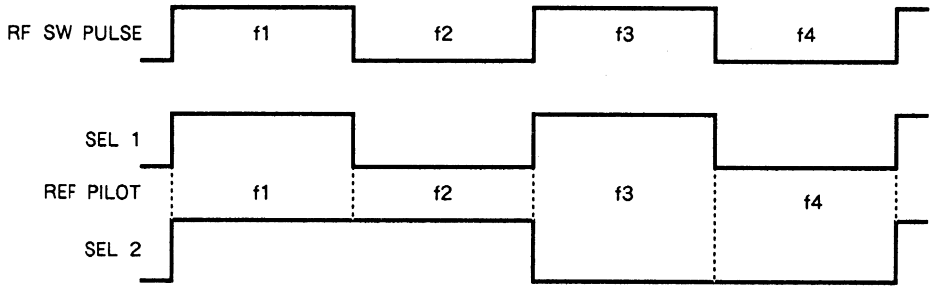
∗7. SP mode recording tape "H"
LP mode recording tape "L"

∗9. 1V period "L" pulse train.

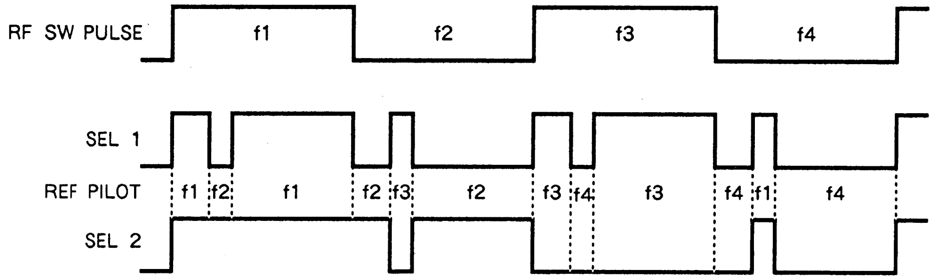
∗10. 1V period "L" pulse train.

∗11. 2V period duty 50% pulse.

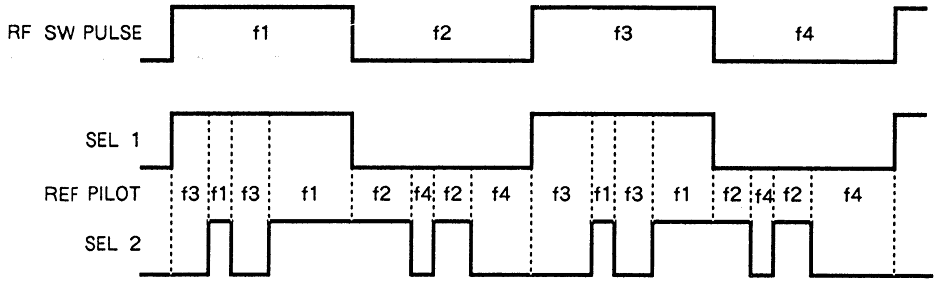
TIMING CHART 1 (REC)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF PILOT
f1
f2
f3
f4
SEL 2

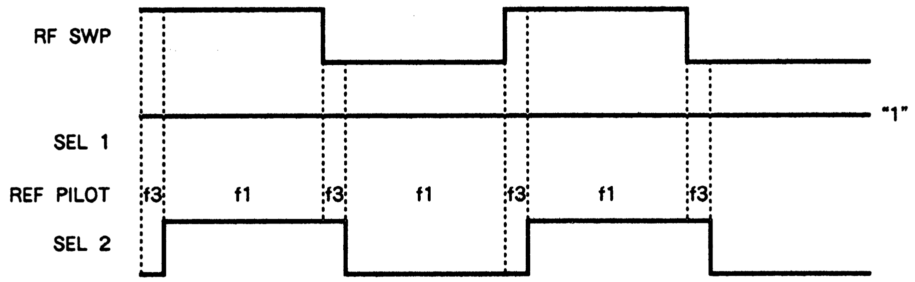
TIMING CHART 2 (PB)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF PILOT
f1 f2 f1 f2 f3 f2 f3 f4 f3 f4 f1 f4
SEL 2

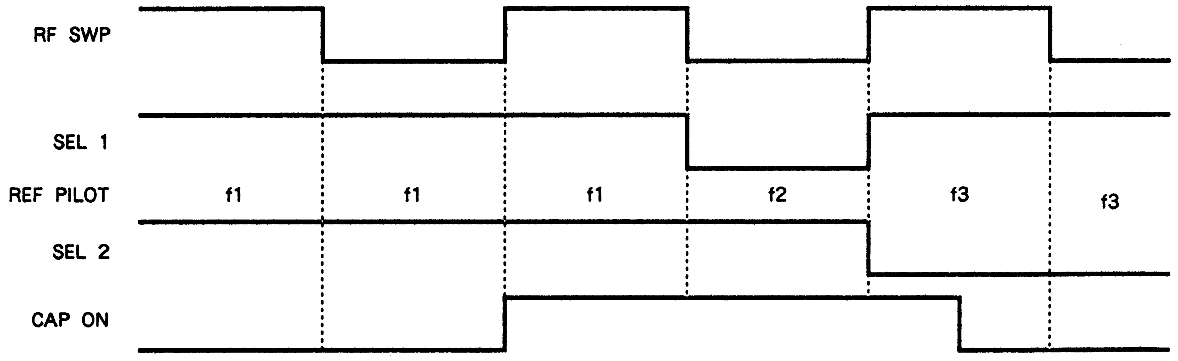
TIMING CHART 3 (CUE/REVIEW)


RF SW PULSE
f1
f2
f3
f4
SEL 1
REF PILOT
f3 f1 f3 f1 f2 f4 f2 f4 f3 f1 f3 f1 f2 f4 f2 f4
SEL 2

TIME CHART (×2)


RF SWP
"1"
SEL 1
REF PILOT
f3 f1 f3 f1 f3 f1 f3
SEL 2

TIME CHART (SLOW)


RF SWP
SEL 1
REF PILOT
f1 f1 f1 f2 f3 f3
SEL 2
CAP ON

when f1 still from step.
when from f3 f1⇒f3 f2⇒f4 f3⇒f1

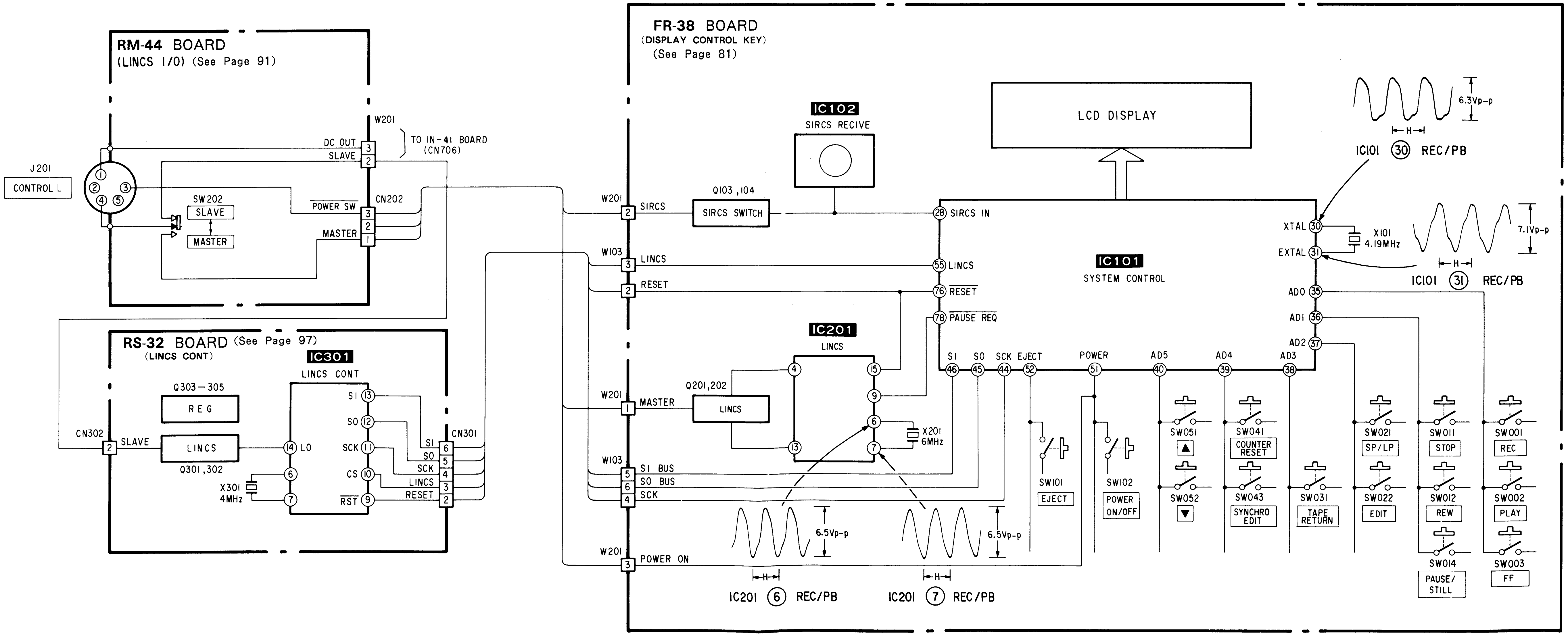
4-8. SYSTEM CONTROL－SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (CM-13 BOARD IC401)

SIGNAL	I/O	Pin No.	INPUT OUTPUT LEVEL
SP/$\overline{\text{LP}}$	O	IC401 ⑫ Pin	"H" in SP recording mode or playback of recorded tape in SP mode
RESET	I	IC401 ㉜ Pin	Normally : "H" ("H" when installing power OFF to ON)
$\overline{\text{M IN 3}}$	I	IC401 ⑮ Pin	No key matrix input signal : "H" (Other : "L")
$\overline{\text{M IN 2}}$	I	IC401 ⑯ Pin	No key matrix input signal : "H" (Other : "L")
$\overline{\text{M IN 1}}$	I	IC401 ⑰ Pin	No key matrix input signal : "H" (Other : "L")
M IN 0	I	IC401 ⑱ Pin	No key matrix input signal : "H" (Other : "L")
T/E LED	O	IC401 ㉗ Pin	PB/REC/PB • PAUSE/REC • PAUSE : 100msec period "H" pulse, STOP/CUE/REVIEW : 10msec period "H" pulse, FF/REW : 2msec period "H" pulse, EJECT or CASSETTE IN detecting : 22msec period "H" pulse
M OUT 2	O	IC401 ㉔ Pin	20msec period "H" pulse
M OUT 1	O	IC401 ㉕ Pin	20msec period "L" pulse
M OUT 0	O	IC401 ㉖ Pin	20msec period "L" pulse
$\overline{\text{MECHA CS}}$	I	IC401 ㊱ Pin	1V period "L" pulse
SYSCON SI	I	IC401 ㊲ Pin	1V period "H" pulse train
SYSCON SO	O	IC401 ㊳ Pin	1V period "L" pulse train
$\overline{\text{SYSCON SCK}}$	I	IC401 ㊴ Pin	1V period "L" pulse train
CLOG	I	IC401 (57) Pin	Normal playback : "L" ("H" when PB RF signal is not reproduced due to head clog, etc.
PB SP/$\overline{\text{LP}}$	I	IC401 (59) Pin	Recording speed mode detection signal in FF, REW, CUE or REVIEW ("H" in SP mode, "L" in LP mode)
UNLD	O	IC401 ⑳ Pin	Normally : "L" ("H" in Unthreading, pulse is output in Mechanical mode transition)
LD	O	IC401 ㉑ Pin	Normally : "L" ("H" in Threading, "H" pulse is output in Mechanical mode transition)
FL UNLD	O	IC401 ㉓ Pin	Normally : "L" ("H" in Front roading)
LD	O	IC401 ㉒ Pin	Normally : "L" ("H" in Front unroading)
FERA	O	IC401 ③ Pin	Normally : "L" ("H" in After recording mask eria)
VI SWP	O	IC401 ④ Pin	Normally slow shared SWP, "H" in only STILL
$\overline{\text{DRUM ACCELL}}$	O	IC401 ⑤ Pin	Normally : "H" (An instant "L" in slow)
DRUM BRAKE	O	IC401 ⑥ Pin	Normally : "L" (An instant "H" in LP slow)
TS B	O	IC401 ⑨ Pin	ATF AGC pulse
H CHG	O	IC401 ⑩ Pin	Normally : "L", when slow, STILL is unphase
C GAIN UP	O	IC401 ⑲ Pin	Normally : "L" ("H" in FF/REW)
REEL LED	O	IC401 ㉘ Pin	Reel led flicker pulse

4-9. SYSTEM CONTROL–MECHANISM BLOCK INTERFACE (CM-13 BOARD IC401, CN405)

<table>
<tr><th>SIGNAL</th><th>I/O</th><th>Pin No.</th><th>INPUT OUTPUT LEVEL</th></tr>
<tr><td>S REEL FG</td><td>I</td><td>IC401 ㊼ Pin</td><td>Pulse (5.0Vp-p) that is generated by S-reel rotation.
It is approx. 1sec period in REC/PB (SP) mode.</td></tr>
<tr><td>MODE SW 2</td><td>I</td><td>CN405 ④ Pin</td><td rowspan="4">Pins are connected to mode switch for mechanical position detection.
<table>
<tr><th></th><th>EJECTED</th><th>THREADING UNTHREADING</th><th>STOP</th><th>REC/PB/FF/ REW/CUE/ REVIEW/PAUSE</th></tr>
<tr><td>MODE SW 2 (④–⑦)</td><td>O</td><td>×</td><td>×</td><td>O</td></tr>
<tr><td>MODE SW 1 (⑤–⑦)</td><td>O</td><td>O</td><td>O</td><td>×</td></tr>
<tr><td>MODE SW 0 (⑥–⑦)</td><td>×</td><td>×</td><td>O</td><td>O</td></tr>
</table>
×…Open
O…Short</td></tr>
<tr><td>MODE SW 1</td><td>I</td><td>CN405 ⑤ Pin</td></tr>
<tr><td>MODE SW 0</td><td>I</td><td>CN405 ⑥ Pin</td></tr>
<tr><td>$\overline{\text{M OUT 0}}$ (COM)</td><td>O</td><td>CN405 ⑦ Pin</td></tr>
<tr><td>CC DOWN</td><td>I</td><td>CN405 ⑧ Pin</td><td rowspan="2">It is connected to cassette compartment down detection (CC DOWN) switch.
When cassette compartment comes down, Pins ⑧ and ⑦ are short-circuited.
When cassette compartment comes up, connection between Pins ⑧ and ⑦ open.</td></tr>
<tr><td>$\overline{\text{M OUT 0}}$ (COM)</td><td>O</td><td>CN405 ⑦ Pin</td></tr>
<tr><td>END SENS</td><td>I</td><td>CN405 ⑨ Pin</td><td>Normally : "L" ("H" pulse is output in tape end or cassette unloaded)</td></tr>
<tr><td>13/10</td><td>I</td><td>CN405 ⑩ Pin</td><td>Not used</td></tr>
<tr><td>MP HG</td><td>I</td><td>CN405 ⑫ Pin</td><td>"H" pulse (20msec period) is output when normal MP tape is used.</td></tr>
<tr><td>TOP END LED</td><td>I</td><td>CN405 ⑬ Pin</td><td>"L" pulse (approx. 1Vp-p) (pulse period is changed from 12 to 170msec according to operation mode.)</td></tr>
<tr><td>TOP SENS</td><td>O</td><td>CN405 ⑭ Pin</td><td>Normally : "L" ("H" pulse is output in tape top or cassette unloaded)</td></tr>
<tr><td>ME/$\overline{\text{MP}}$</td><td>I</td><td>CN405 ⑮ Pin</td><td>"L" in MP tape ("H" pulse (20msec period) in cassette unloaded)</td></tr>
<tr><td>REC PROOF</td><td>I</td><td>CN405 ⑰ Pin</td><td>"L" when recording possible cassette is loaded
"H" pulse (20msec period) is output, when recording inhibiting cassette is loaded.</td></tr>
<tr><td>T REEL FG</td><td>I</td><td>CN405 ⑱ Pin</td><td>Pulse (5.0Vp-p) that is generated by T-reel rotation, in REC/PB (SP) mode, it is approx. 1sec period.</td></tr>
</table>

4-10. DISPLAY CONTROL BLOCK DIAGRAM


RM-44 BOARD
(LINCS I/O) (See Page 91)
J201
CONTROL L
SW202
SLAVE
MASTER
W201
DC OUT
SLAVE
TO IN-41 BOARD (CN706)
POWER SW
CN202
MASTER
RS-32 BOARD (See Page 97)
(LINCS CONT)
IC301
LINCS CONT
Q303-305
REG
CN302
SLAVE
LINCS
Q301,302
X301 4MHz
LO
SI
SO
SCK
CS
RST
CN301
LINCS
RESET
FR-38 BOARD
(DISPLAY CONTROL KEY)
(See Page 81)
IC102
SIRCS RECIVE
LCD DISPLAY
Q103,104
SIRCS SWITCH
W201
SIRCS
W103
LINCS
RESET
SIRCS IN
LINCS
RESET
PAUSE REQ
IC101
SYSTEM CONTROL
XTAL
EXTAL
X101 4.19MHz
AD0
AD1
AD2
AD3
AD4
AD5
POWER
EJECT
SI SO SCK
IC201
LINCS
Q201,202
MASTER
X201 6MHz
SI BUS
SO BUS
SCK
POWER ON
6.3Vp-p
IC101 (30) REC/PB
7.1Vp-p
IC101 (31) REC/PB
6.5Vp-p
IC201 ⑥ REC/PB
IC201 ⑦ REC/PB
H
SW101 EJECT
SW102 POWER ON/OFF
SW051 ▲
SW052 ▼
SW041 COUNTER RESET
SW043 SYNCHRO EDIT
SW031 TAPE RETURN
SW021 SP/LP
SW022 EDIT
SW011 STOP
SW012 REW
SW014 PAUSE/STILL
SW001 REC
SW002 PLAY
SW003 FF

4-11. PIN ASSIGNMENT CXP-5078 (IC101) SYSTEM CONTROL/MODE CONTROL BLOCK INTERFACE (FR BOARD IC101)

Pin. No.	I/O	SIGNAL/INPUT OUTPUT LEVEL	Pin. No.	I/O	SIGNAL/INPUT OUTPUT LEVEL	Pin. No.	I/O	SIGNAL/INPUT OUTPUT LEVEL
1	O	AGC MUTE	28	I	SIRCS IN	55	O	LINCS CS
2	O	———	29	I	INT VD	56	O	MECHA CS
3	O	———	30	O	XTAL	57	O	VIDEO CS
4	O	LCD SP/LP	31	I	EXTAL	58	O	ME・MP
5	O	LCD H02	32	I	RST	59	O	———
6	O	LCD H01	33		(int. VDD)	60	O	———
7	O	LCD H00	34		VDD	61	I	("L")
8	O	LCD M12	35	I	AD 0	62	I	("L")
9	O	LCD M11	36	I	AD 1	63	O	PB LED
10	O	LCD M10	37	I	AD 2	64	O	POWER OFF
11	O	LCD M02	38	I	AD 3	65	O	REC LED
12	O	LCD M01	39	I	AD 4	66	O	PAUSE LED
13	O	LCD M00	40	I	AD 5	67	O	———
14	O	LCD S12	41	I	("H")	68	O	———
15	O	LCD S11	42	I	("H")	69	O	———
16	O	LCD S10	43		N. C.	70	O	———
17	O	LCD S02	44	O	SCK	71		GND
18	O	LCD S01	45	O	SO BUS	72	O	———
19	O	LCD S00	46	I	SI BUS	73		(int. VDD)
20	O	———	47	I	("L")	74	I	("H")
21	O	LCD COM 2	48	O	EDIT	75		VREF
22	O	LCD COM 1	49	I	("H")	76	O	RESET
23	O	LCD COM 0	50	I	("L")	77	O	———
24	I	LCD BIAS 1	51	I	POWER SW	78	O	PAUSE REQ
25	I	LCD BIAS 2	52	I	EJECT SW	79	O	SYNCHRO EDIT LED
26	I	LCD BIAS 3	53	I	FL+CC SW	80	O	AUDIO MUTE
27	O	———	54	I	("H")			

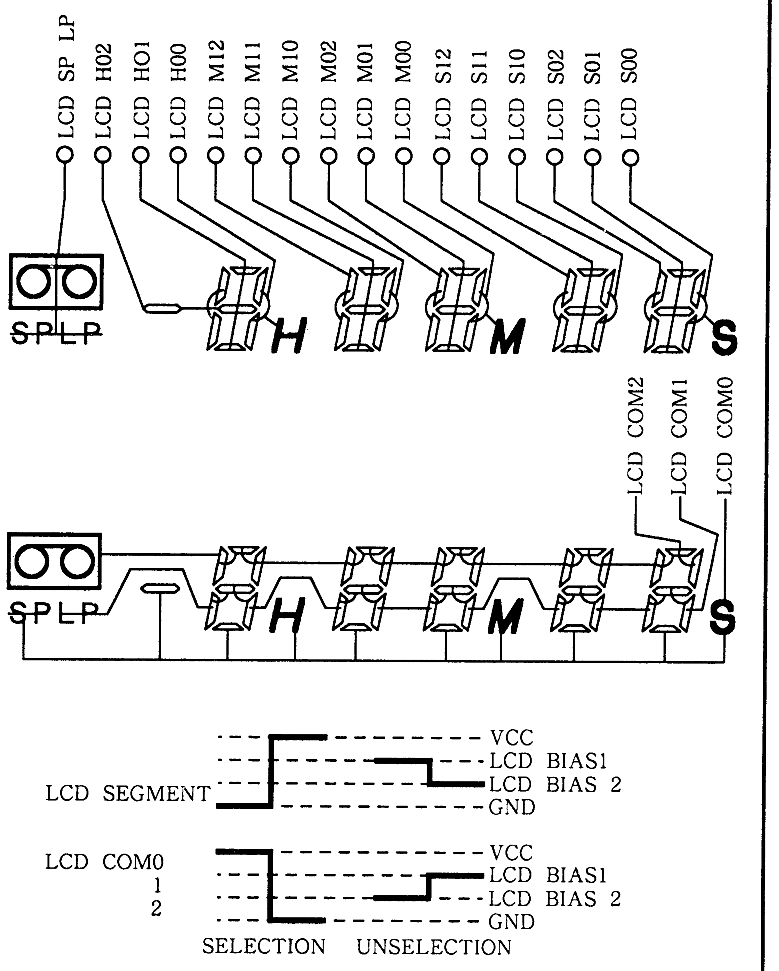
MODE CONTROL (IC101)

SIGNAL	I/O	Pin. No.	INPUT OUTPUT LEVEL
RST	I	IC101㉜Pin	Mode control reset signal (AC power ON/OFF)
RESET	O	IC101(76)Pin	Reset signal output (Set power ON/OFF) : Mechanism control, LINCS MASTER microcomputer (FR-38 board) LINCS SLAVE microcomputer (RS-32 board)
INT VD	I	IC101㉙Pin	V sync timing signal : Input mechanism control (CM-13 board)
SCK	O	IC101㊹Pin	Data input output timing (SI, SO, BUS) : Mechanism control (CM-13 board), LINCS SLAVE microcomputer (RS-32 board), VIDEO IC (VI-52 board)
SO BUS	O	IC101㊺Pin	Serial data output : Mechanism control (CM-13 board), LINCS SLAVE microcomputer (RS-32 board), VIDEO IC (VI-52 board)
SI BUS	I	IC101㊻Pin	Serial data output : Mechanism control (CM-13 board), LINCS SLAVE microcomputer (RS-32 board)
MECHA CS	O	IC101(56)Pin	Mechanism control chip select (CM-13 board)
LINCS CS	O	IC101(55)Pin	LINCS SLAVE microcomputer chip select (RS-32 board)
VIDEO CS	O	IC101(57)Pin	VIDEO IC chip select (VI-52 board)
PAUSE REQ	O	IC101(78)Pin	LINCS MASTER microcomputer control (FR-38 board) An instant "L" in SYNCHRO EDIT mode ON/OFF.
SIRCS IN	I	IC101㉘Pin	Input SIRCS signal, CONTROL S signal
FL+CC SW	I	IC101(53)Pin	Power OFF (Setting the cassette-tape)
POWER SW	I	IC101(51)Pin	Input button (Set power ON/OFF)
EDIT SW	I	IC101(52)Pin	Input button (EDIT ON/OFF)

FUNCTION KEY (A/D Converter)

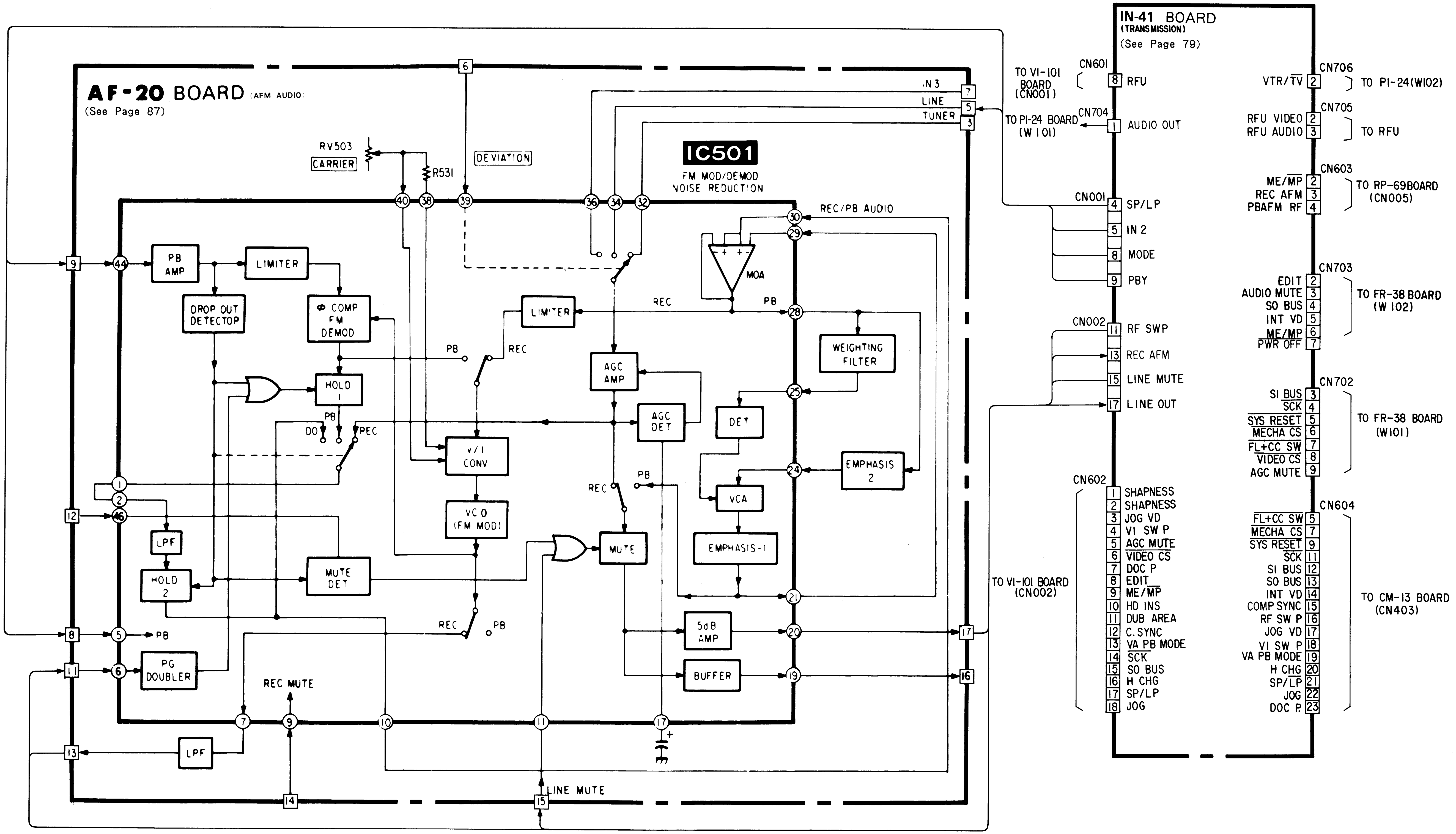
SIGNAL	I/O	Pin. No.	1 (1/5 Vcc)	2 (2/5 Vcc)	3 (3/5 Vcc)	4 (4/5 Vcc)	5 (Vcc)
AD0	I	IC101㉟Pin	REC	PB	FF	–	–
AD1	I	IC101㊱Pin	STOP	REW	–	PAUSE	–
AD2	I	IC101㊲Pin	SP/LP	EDIT	–	–	–
AD3	I	IC101㊳Pin	TAPE RETURN	–	–	TEST 2	–
AD4	I	IC101㊴Pin	COUNTER RESET	–	SYNCHRO EDIT	TEST 1	–
AD5	I	IC101㊵Pin	▽	△	–	–	–

SIGNAL	I/O	Pin. No.	INPUT OUTPUT LEVEL
AUDIO MUTE	O	IC101 (80) Pin	"H" in mute (Audio signal mute)
AGC MUTE	O	IC101 ① Pin	An instant "H" (mute) PB to E-E mode
EDIT	O	IC101 ㊽ Pin	EDIT mode "H"
ME $\overline{\text{MP}}$	O	IC101 (58) Pin	MP tape "L"
$\overline{\text{PB LED}}$	O	IC101 (63) Pin	PB mode "L"
POWER OFF	O	IC101 (64) Pin	"L" in power control set power ON, "H" in set power OFF.
$\overline{\text{REC LED}}$	O	IC101 (65) Pin	REC mode "L"
$\overline{\text{PAUSE LED}}$	O	IC101 (66) Pin	STILL, REC PAUSE mode "L"
$\overline{\text{SYNCHRO EDIT LED}}$	O	IC101 (79) Pin	SYNCHRO EDIT mode "L"
LCD BIAS 1	I	IC101 ㉔ Pin	2/3 Vcc
LCD BIAS 2	I	IC101 ㉕ Pin	1/3 Vcc
LCD BIAS 3	I	IC101 ㉖ Pin	GND

SIGNAL	I/O	Pin. No.	INPUT OUTPUT LEVEL
LCD SP/LP	O	IC101 ④ Pin	
LCD H02	O	IC101 ⑤ Pin	
LCD H01	O	IC101 ⑥ Pin	
LCD H00	O	IC101 ⑦ Pin	
LCD M12	O	IC101 ⑧ Pin	
LCD M11	O	IC101 ⑨ Pin	
LCD M10	O	IC101 ⑩ Pin	
LCD M02	O	IC101 ⑪ Pin	
LCD M01	O	IC101 ⑫ Pin	
LCD M00	O	IC101 ⑬ Pin	
LCD S12	O	IC101 ⑭ Pin	
LCD S11	O	IC101 ⑮ Pin	
LCD S10	O	IC101 ⑯ Pin	
LCD S02	O	IC101 ⑰ Pin	
LCD S01	O	IC101 ⑱ Pin	
LCD S00	O	IC101 ⑲ Pin	
LCD COM 2	O	IC101 ㉑ Pin	
LCD COM 1	O	IC101 ㉒ Pin	
LCD COM 0	O	IC101 ㉓ Pin	

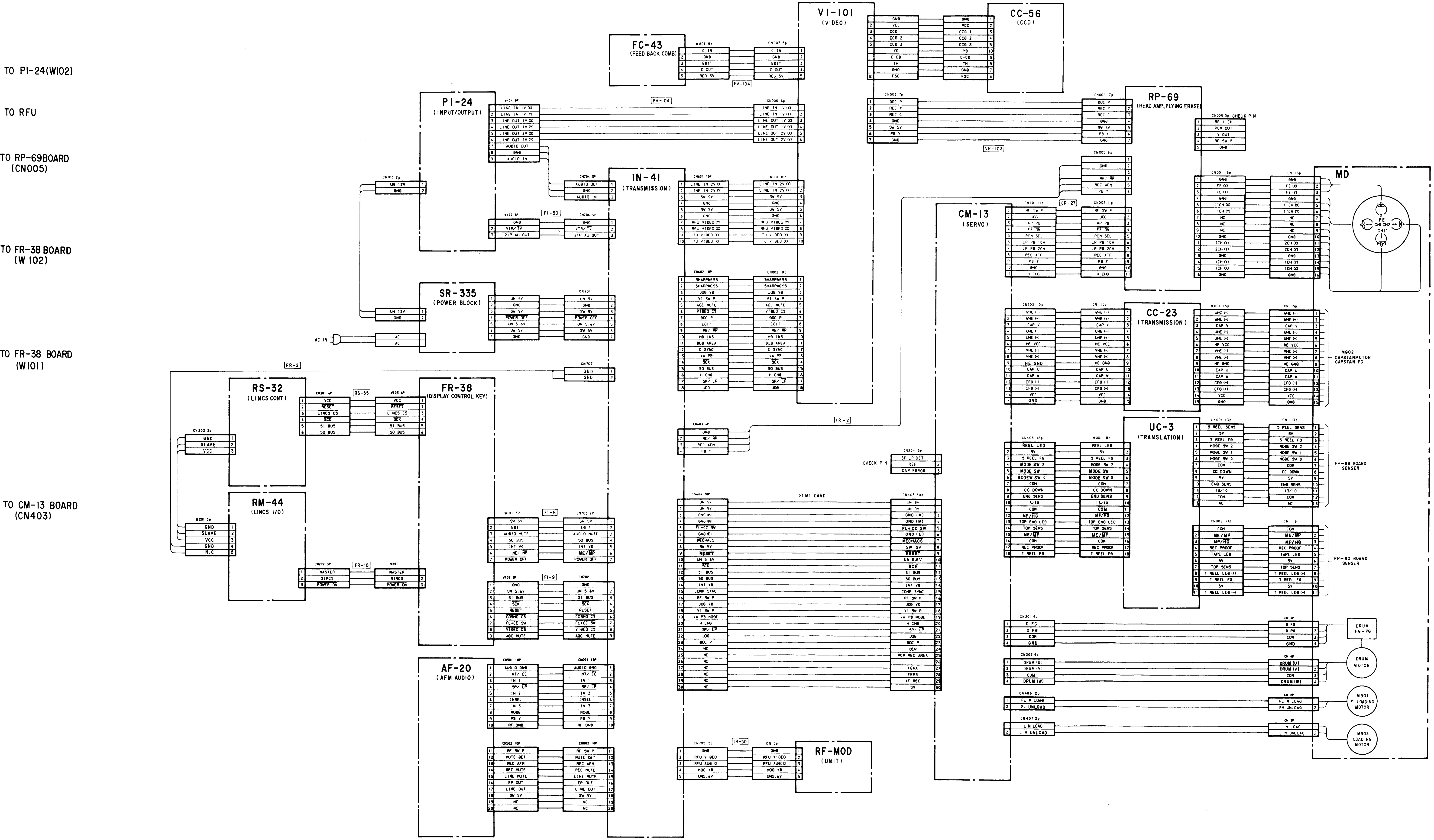
LCD SP LP
LCD H02
LCD H01
LCD H00
LCD M12
LCD M11
LCD M10
LCD M02
LCD M01
LCD M00
LCD S12
LCD S11
LCD S10
LCD S02
LCD S01
LCD S00
SP LP
H
M
S
LCD COM2
LCD COM1
LCD COM0
SP LP
H
M
S
VCC
LCD BIAS1
LCD BIAS 2
GND
LCD SEGMENT
LCD COM0
1
2
VCC
LCD BIAS1
LCD BIAS 2
GND
SELECTION
UNSELECTION

4-12. AUDIO BLOCK DIAGRAM


AF-20 BOARD (AFM AUDIO)
(See Page 87)
RV503
CARRIER
R531
DEVIATION
IC501
FM MOD/DEMOD
NOISE REDUCTION
IN3
LINE
TUNER
REC/PB AUDIO
PB AMP
LIMITER
DROP OUT DETECTOR
Φ COMP FM DEMOD
HOLD 1
LIMITER
AGC AMP
AGC DET
MOA
WEIGHTING FILTER
DET
V/I CONV
VCO (FM MOD)
EMPHASIS 2
VCA
EMPHASIS-1
LPF
HOLD 2
MUTE DET
MUTE
5dB AMP
BUFFER
PG DOUBLER
LPF
REC
PB
DO
PEC
REC MUTE
LINE MUTE
IN-41 BOARD (TRANSMISSION)
(See Page 79)
TO VI-101 BOARD (CN001)
CN601
8 RFU
TO PI-24 BOARD (W101)
CN704
1 AUDIO OUT
CN001
4 SP/LP
5 IN 2
8 MODE
9 PBY
CN002
11 RF SWP
13 REC AFM
15 LINE MUTE
17 LINE OUT
TO VI-101 BOARD (CN002)
CN602
1 SHAPNESS
2 SHAPNESS
3 JOG VD
4 VI SW P
5 AGC MUTE
6 VIDEO CS
7 DOC P
8 EDIT
9 ME/MP
10 HD INS
11 DUB AREA
12 C.SYNC
13 VA PB MODE
14 SCK
15 SO BUS
16 H CHG
17 SP/LP
18 JOG
CN706
VTR/TV 2
TO PI-24(W102)
CN705
RFU VIDEO 2
RFU AUDIO 3
TO RFU
CN603
ME/MP 2
REC AFM 3
PBAFM RF 4
TO RP-69BOARD (CN005)
CN703
EDIT 2
AUDIO MUTE 3
SO BUS 4
INT VD 5
ME/MP 6
PWR OFF 7
TO FR-38 BOARD (W102)
CN702
SI BUS 3
SCK 4
SYS RESET 5
MECHA CS 6
FL+CC SW 7
VIDEO CS 8
AGC MUTE 9
TO FR-38 BOARD (W101)
CN604
FL+CC SW 5
MECHA CS 7
SYS RESET 9
SCK 11
SI BUS 12
SO BUS 13
INT VD 14
COMP SYNC 15
RF SW P 16
JOG VD 17
VI SW P 18
VA PB MODE 19
H CHG 20
SP/LP 21
JOG 22
DOC P 23
TO CM-13 BOARD (CN403)

SECTION 5
PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

5-1. FRAME SCHEMATIC DIAGRAM


TO PI-24(W102)
TO RFU
TO RP-69BOARD (CN005)
TO FR-38 BOARD (W 102)
TO FR-38 BOARD (W101)
TO CM-13 BOARD (CN403)
FC-43 (FEED BACK COMB)
VI-101 (VIDEO)
CC-56 (CCD)
PI-24 (INPUT/OUTPUT)
RP-69 (HEAD AMP, FLYING ERASE)
IN-41 (TRANSMISSION)
CM-13 (SERVO)
MD
SR-335 (POWER BLOCK)
CC-23 (TRANSMISSION)
AC IN
RS-32 (LINCS CONT)
FR-38 (DISPLAY CONTROL KEY)
UC-3 (TRANSLATION)
RM-44 (LINCS I/O)
SUMI CARD
CHECK PIN
AF-20 (AFM AUDIO)
RF-MOD (UNIT)
M902 CAPSTAN MOTOR CAPSTAN FG
FP-89 BOARD SENSER
FP-90 BOARD SENSER
DRUM FG-PG
DRUM MOTOR
M901 FL LOADING MOTOR
M903 LOADING MOTOR
FV-104
PV-104
PI-50
FR-2
RS-55
FR-10
FI-8
FI-9
IR-2
IR-50
VR-103
CR-27

5-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.
(In addition to this, the necessary note is printed in each block.)

For printed wiring boards :

- o— : indicates a lead wire mounted on the componet side.
- ● : Through hole..
- ▓ : Pattern from the side which enables seeing.
- ░ : Pattern of the rear side.
- Circled numbers refer to waveforms.

> Note :
> Conductor side : Parts on the conductor side being seen from the conductor are stated.
> Component side : Parts on the component side being seen from the component are stated.

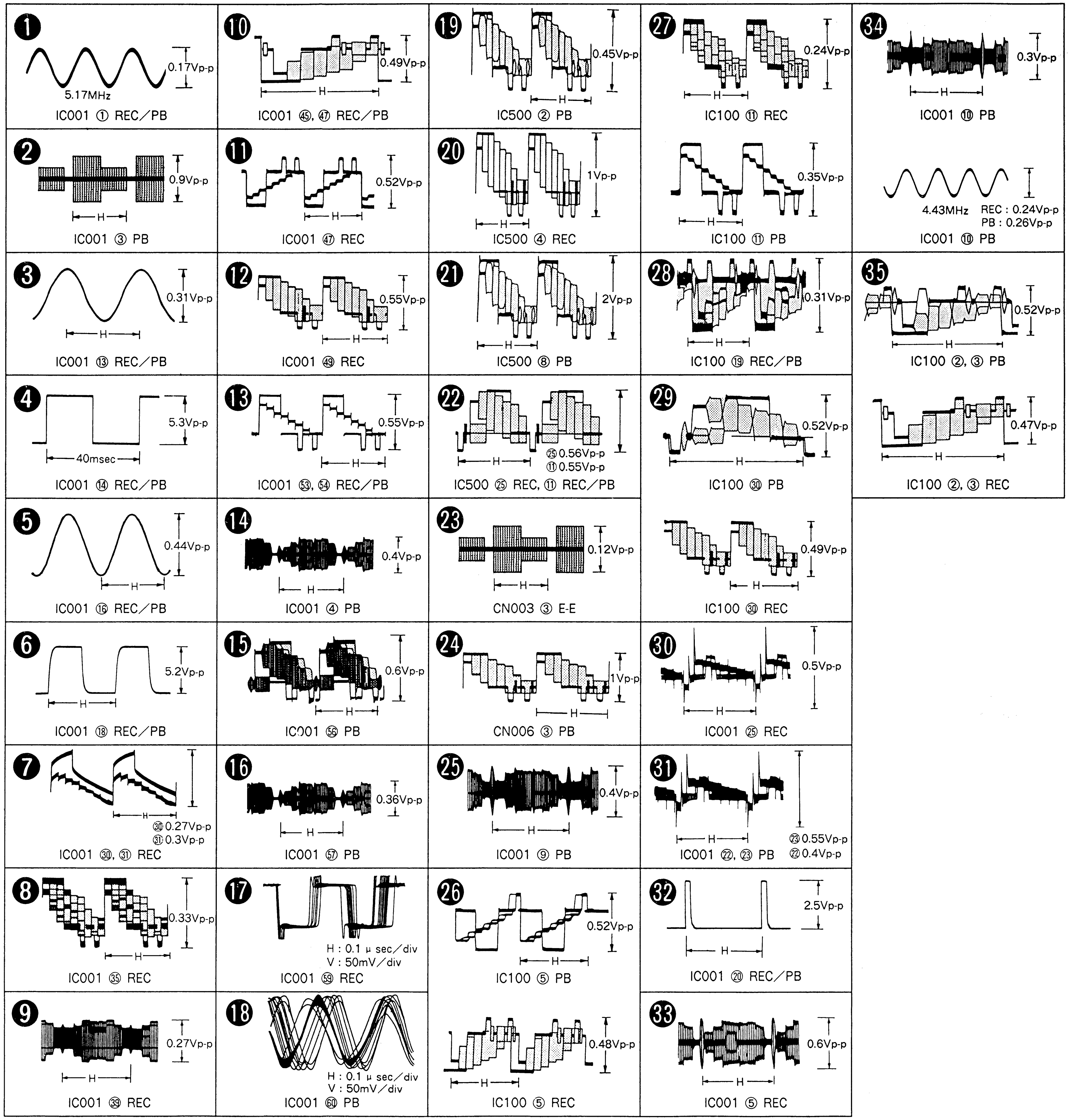
For schematic diagram :

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, chip resistors are 1/10W unless otherwise noted. kΩ : 1000Ω, MΩ : 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF : μμF. 50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic carve B, unless otherwise noted.
- ▭ : nonflammeble resistor.
- ▭ : fusible resistor.
- ▭ : panel designation.
- △ : internal component.
- ⬚ : adjustment for repair.
- ▬ : B+ line.
- ▨ : IN/OUT direction of B line (+).
- Circled numbers refer to waveforms.
- Voltages are dc between ground and measurement points.
- Readings are taken with color-bar signal input.
- Readings are taken with a digital multimeter (DC10MΩ).
- Voltages are taken with a VOM (Input impedance 10MΩ).
- Voltage variations may be noted due to normal production tolerances.

> The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
> Replace only with part number specified.

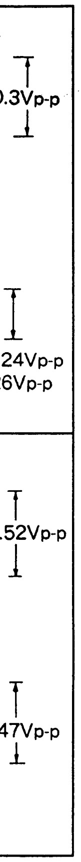
> When indicating parts by reference number, please include the board name.

VI-101 BOARD



VI-101 Board

D001	C-9
D002	F-9
D250	F-12
D400	B-14
D401	A-14
D500	H-5
D501	H-6
IC001	E-7
IC400	B-12
IC500	H-4
Q001	E-5
Q003	D-6
Q004	C-6
Q005	B-6
Q006	B-6
Q007	A-6
Q008	A-6
Q009	C-6
Q010	D-6
Q011	B-8
Q012	C-9
Q013	B-10
Q014	B-10
Q015	B-9
Q019	D-9
Q020	F-10
Q021	G-9
Q022	H-8
Q023	G-6
Q024	D-15
Q200	D-11
Q201	C-12
Q202	E-11
Q203	H-12
Q204	H-11
Q205	H-11
Q251	F-12
Q252	G-12
Q253	G-12
Q254	G-12
Q255	G-11
Q256	G-10
Q257	D-12
Q260	H-10
Q309	E-2
Q310	G-15
Q311	F-15
Q312	E-15
Q313	E-15
Q400	A-13
Q401	A-13
Q402	A-11
Q403	A-13
Q404	A-13
Q405	B-11
Q500	H-5
Q501	H-5
Q502	G-2
Q503	G-3
Q505	I-5
Q900	H-13
Q901	H-13


.3Vp-p
24Vp-p
6Vp-p
.52Vp-p
47Vp-p

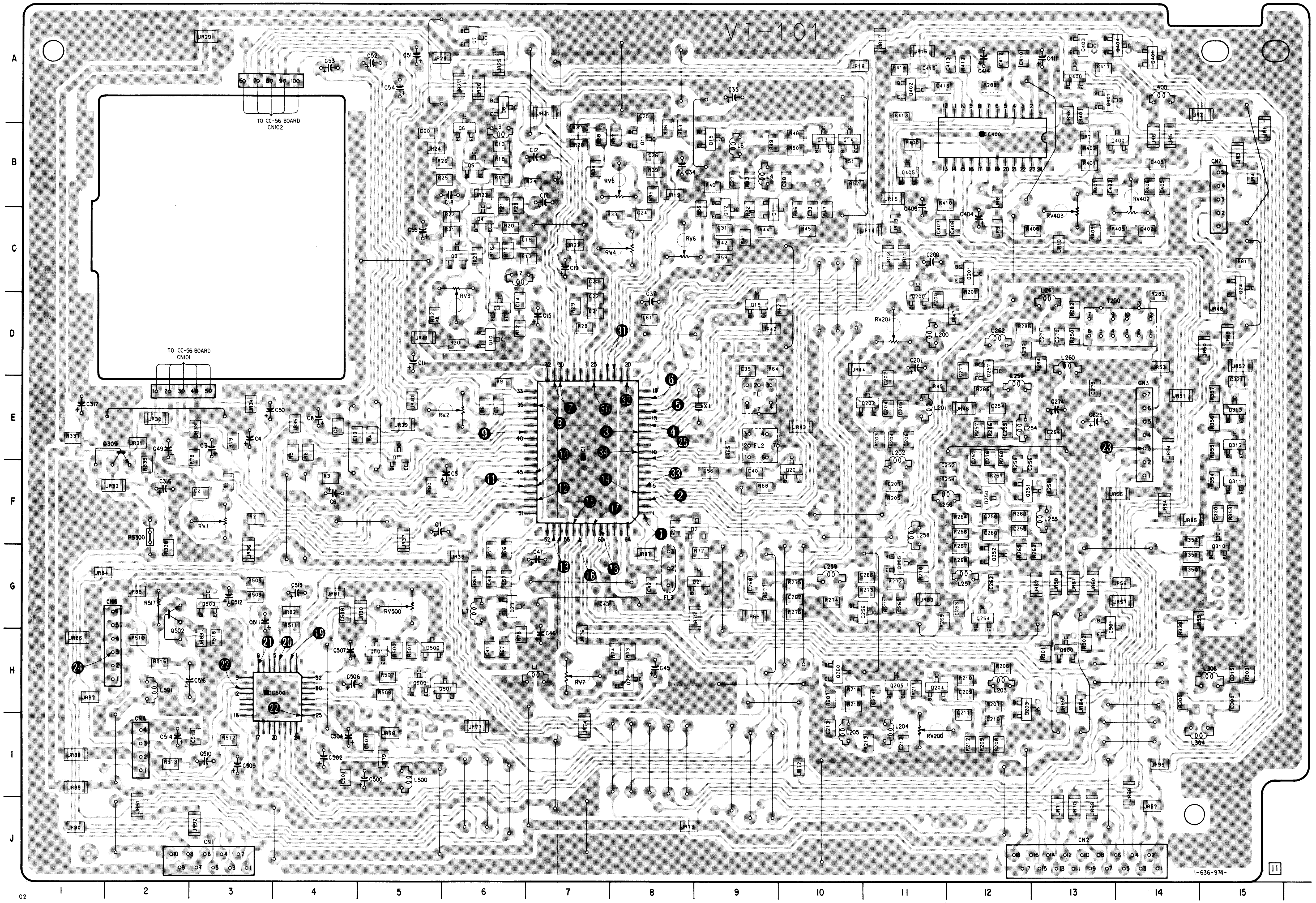
VI-101 (VIDEO) PRINTED WIRING BOARDS

—Ref. No. VI-101 BOARD : 1,000 Series—

VI-101 Board

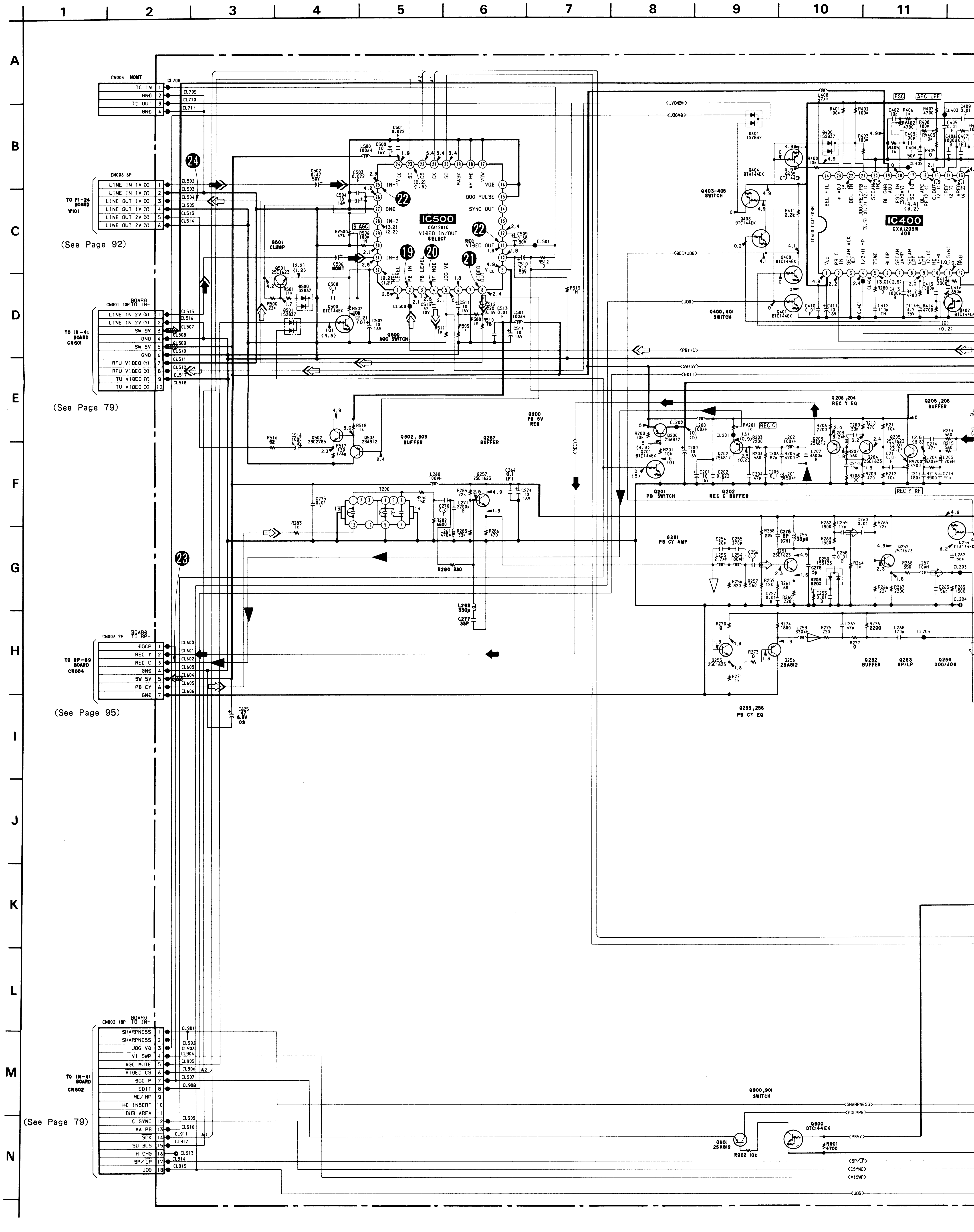
D001	C-9
D002	F-9
D250	F-12
D400	B-14
D401	A-14
D500	H-5
D501	H-6
IC001	E-7
IC400	B-12
IC500	H-4
Q001	E-5
Q003	D-6
Q004	C-6
Q005	B-6
Q006	B-6
Q007	A-6
Q008	A-6
Q009	C-6
Q010	D-6
Q011	B-8
Q012	C-9
Q013	B-10
Q014	B-10
Q015	B-9
Q019	D-9
Q020	F-10
Q021	G-9
Q022	H-8
Q023	G-6
Q024	D-15
Q200	D-11
Q201	C-12
Q202	E-11
Q203	H-12
Q204	H-11
Q205	H-11
Q251	F-12
Q252	G-12
Q253	G-12
Q254	G-12
Q255	G-11
Q256	G-10
Q257	D-12
Q260	H-10
Q309	E-2
Q310	G-15
Q311	F-15
Q312	E-15
Q313	E-15
Q400	A-13
Q401	A-13
Q402	A-11
Q403	A-13
Q404	A-13
Q405	B-11
Q500	H-5
Q501	H-5
Q502	G-2
Q503	G-3
Q505	I-5
Q900	H-13
Q901	H-13

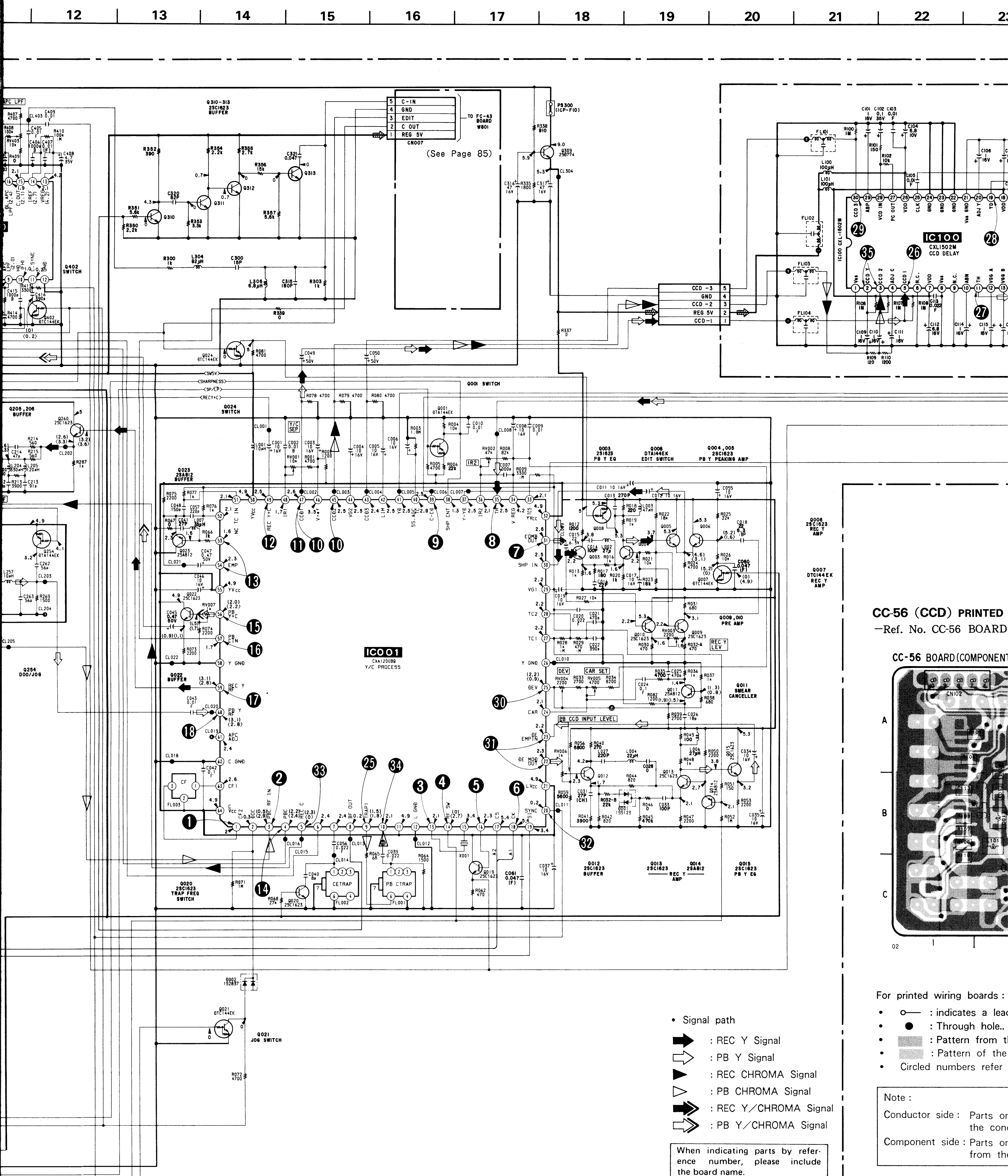
VI-101 BOARD (CONDUCTOR SIDE)


VI-101
TO CC-56 BOARD CN102
TO CC-56 BOARD CN101
IC001
IC400
IC500
CN1
CN2
CN3
CN4
CN6
CN7
T200
A
B
C
D
E
F
G
H
I
J
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
1-636-974-
11

VI-101 (VIDEO), CC-56 (CCD) SCHEMATIC DIAGRAMS

—Ref. No. VI-101, CC-56 BOARDS : 1,000 Series—


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
CN004 NOMT
TC IN
GND
TC OUT
GND
CN006 6P
LINE IN 1V (C)
LINE IN 1V (Y)
LINE OUT 1V (C)
LINE OUT 1V (Y)
LINE OUT 2V (C)
LINE OUT 2V (Y)
TO PI-24 BOARD W101
(See Page 92)
CN001 10P TO IN- BOARD
LINE IN 2V (C)
LINE IN 2V (Y)
SW 9V
GND
SW 5V
GND
RFU VIDEO (Y)
RFU VIDEO (C)
TU VIDEO (Y)
TU VIDEO (C)
TO IN-41 BOARD CN601
(See Page 79)
CN003 7P TO RP- BOARD
DOCP
REC Y
REC C
GND
SW 5V
PB CY
GND
TO RP-69 BOARD CN004
(See Page 95)
CN002 18P TO IN- BOARD
SHARPNESS
SHARPNESS
JOG VD
VI SWP
AGC MUTE
VIDEO CS
DOC P
EDIT
ME/MP
HD INSERT
DUB AREA
C SYNC
VA PB
SCK
SO BUS
H CHG
SP/LP
JOG
TO IN-41 BOARD CN602
(See Page 79)
IC500
CXA1201Q
VIDEO IN/OUT SELECT
IC400
CXA1203M
JOG
Q501 CLUMP
Q500 AGC SWITCH
Q502, 503 BUFFER
Q257 BUFFER
Q200 PB 5V REG
Q403-405 SWITCH
Q400, 401 SWITCH
Q203, 204 REC Y EQ
Q205, 206 BUFFER
Q201 PB SWITCH
Q202 REC C BUFFER
Q251 PB CY AMP
Q252 BUFFER
Q253 SP/LP
Q254 DOO/JOG
Q255, 256 PB CY EQ
Q900, 901 SWITCH
T200
REC C
REC Y RF
FSC
APC LPF
S AGC
19
20
21
22
23
24
(JVONBH)
(JOBVD)
(DOC+JOG)
(JOG)
(PBY+C)
(SW+5V)
(EDIT)
(RECY)
(SHARPNESS)
(DOC+PB)
(PB5V)
(SP/LP)
(CSYNC)
(VISWP)
(JOG)


12
13
14
15
16
17
18
19
20
21
22
Q310-313 2SC1623 BUFFER
C-IN
GND
EDIT
C OUT
REG 5V
CN007
TO FC-43 BOARD W801
(See Page 85)
PS300 (ICP-F10)
Q309 2SD774
Q402 SWITCH
Q024 SWITCH
Q001 SWITCH
Q205,206 BUFFER
Q023 2SA812 BUFFER
Q254 DOO/JOG
Q022 BUFFER
Q020 2SC1623 TRAP FREQ SWITCH
Q021 JOG SWITCH
Q003 2SB1623 PB Y EQ
Q008 DTA144EK EDIT SWITCH
Q004,005 2SC1623 PB Y PEAKING AMP
Q006 2SC1623 REC Y AMP
Q007 DTC144EK REC Y AMP
Q009,010 PRE AMP
Q011 SMEAR CANCELLER
Q012 2SC1623 BUFFER
Q013 2SC1623 Q014 2SA812 REC Y AMP
Q015 2SC1623 PB Y EQ
IC001 CXA1200BQ Y/C PROCESS
IC100 CXL1502M CCD DELAY
CCD-3
GND
CCD-2
REG 5V
CCD-1
CETRAP
PB CTRAP
PB CCD INPUT LEVEL
REC Y LEV
DEV
CAR SET
CC-56 BOARD (COMPONENT
CN102
A
B
C
02

- Signal path

➡	: REC Y Signal
⇨	: PB Y Signal
▶	: REC CHROMA Signal
▷	: PB CHROMA Signal
➡	: REC Y/CHROMA Signal
⇨	: PB Y/CHROMA Signal

When indicating parts by reference number, please include the board name.

VI-101 BOARD (VIDEO)

CC-56 (CCD) PRINTED

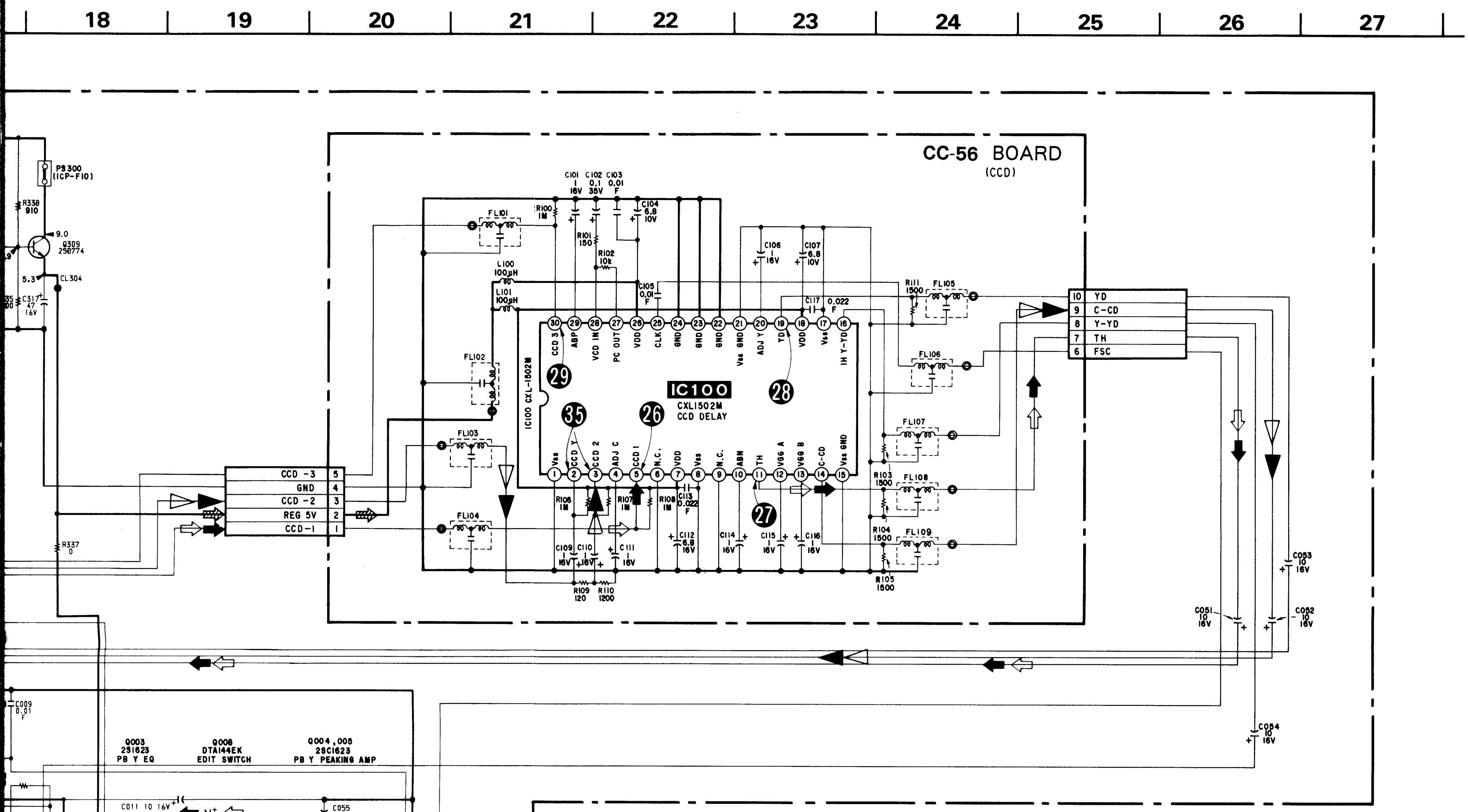
—Ref. No. CC-56 BOARD

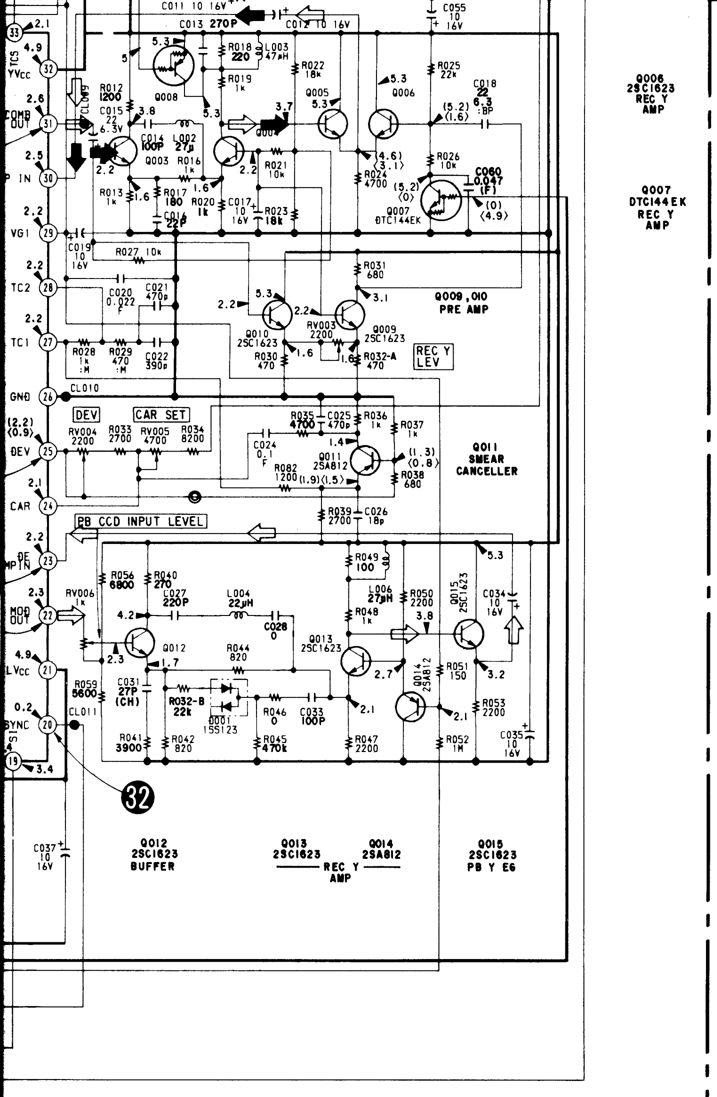
For printed wiring boards :

- ○— : indicates a lea
- ● : Through hole..
- ▨ : Pattern from t
- ▨ : Pattern of the
- Circled numbers refer

Note :

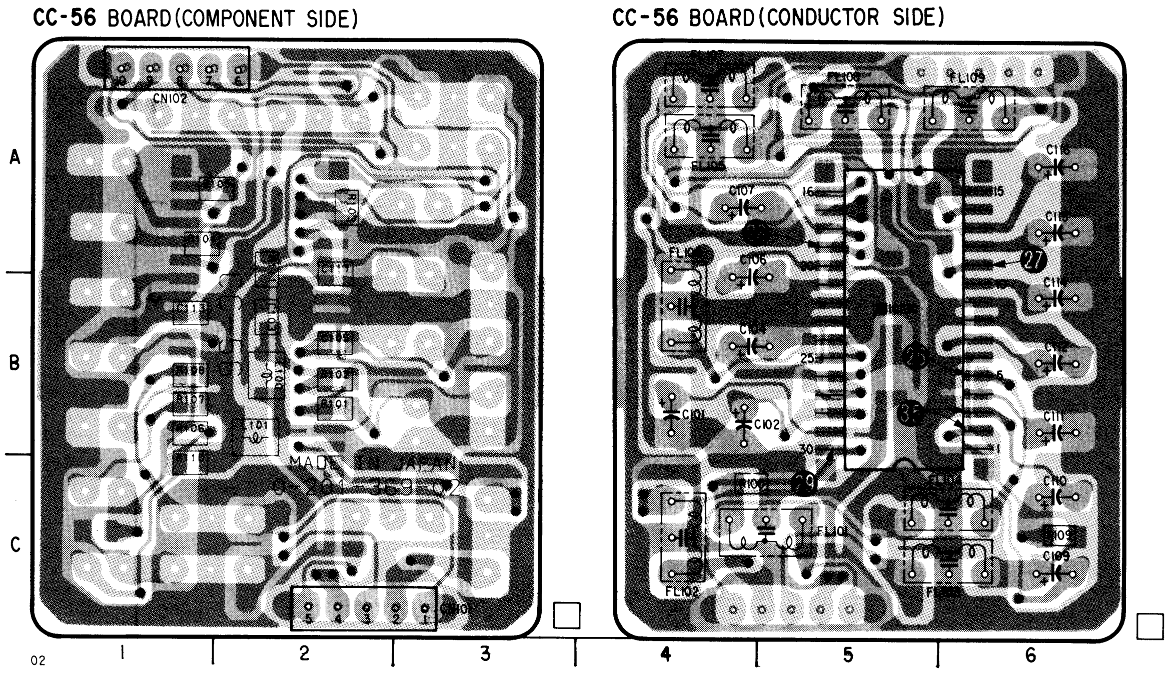
Conductor side :	Parts or the con
Component side :	Parts or from th


18
19
20
21
22
23
24
25
26
27
CC-56 BOARD
(CCD)
IC100
CXL1502M
CCD DELAY
IC100 CXL-1502M
CCD 3
ABP
VCD IN
PC OUT
VDD
CLK
GND
Vss GND
ADJ Y
YD
Vss
IH Y-YD
Vss
CCD Y
CCD 2
ADJ C
CCD 1
N.C.
ABN
TH
VGG A
VGG B
C-CD
Vss GND
CCD-3
GND
CCD-2
REG 5V
CCD-1
YD
C-CD
Y-YD
TH
FSC
FL101
FL102
FL103
FL104
FL105
FL106
FL107
FL108
FL109
L100 100μH
L101 100μH
C101 1 16V
C102 0.1 35V
C103 0.01 F
C104 6.8 10V
C105 0.01 F
C106 1 16V
C107 6.8 10V
C117 0.022 F
C113 0.022 F
C112 6.8 16V
R100 1M
R101 150
R102 10k
R106 1M
R107 1M
R108 1M
R109 120
R110 1200
R111 1500
R103 1500
R104 1500
R105 1500
C051 10 16V
C052 10 16V
C053 10 16V
C054 10 16V
PS300 ICP-F10
R338 910
Q309 2SB774
CL304
R337 0
㉙
㉟
㉖
㉘
㉗


C009 0.01 F
Q003 2S1623 PB Y EQ
Q008 DTA144EK EDIT SWITCH
Q004,005 2SC1623 PB Y PEAKING AMP
Q006 2SC1623 REC Y AMP
Q007 DTC144EK REC Y AMP
Q009,010 PRE AMP
Q011 SMEAR CANCELLER
REC Y LEV
DEV
CAR SET
PB CCD INPUT LEVEL
YVcc
COMB OUT
VG1
TC2
TC1
GND
DEV
CAR
MOD OUT
LVcc
SYNC
CL010
CL011
Q012 2SC1623 BUFFER
Q013 2SC1623
Q014 2SA812
REC Y AMP
Q015 2SC1623 PB Y EQ
C037 10 16V
㉜

CC-56 (CCD) PRINTED WIRING BOARD

—Ref. No. CC-56 BOARD : 1,000 Series—



CC-56 BOARD (COMPONENT SIDE)

CC-56 BOARD (CONDUCTOR SIDE)

A
B
C
1
2
3
4
5
6
02
CN102
MADE IN JAPAN
㉗

For printed wiring boards :

- ○— : indicates a lead wire mounted on the componet side.
- ● : Through hole..
- ▨ : Pattern from the side which enables seeing.
- ░ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Note :

Conductor side :	Parts on the conductor side being seen from the conductor are stated.
Component side :	Parts on the component side being seen from the component are stated.

- Signal path

➡	: REC Y Signal
⇨	: PB Y Signal
▶	: REC CHROMA Signal
▷	: PB CHROMA Signal
➡	: REC Y/CHROMA Signal
⇨	: PB Y/CHROMA Signal

When indicating parts by reference number, please include the board name.

VI-101 BOARD (VIDEO)

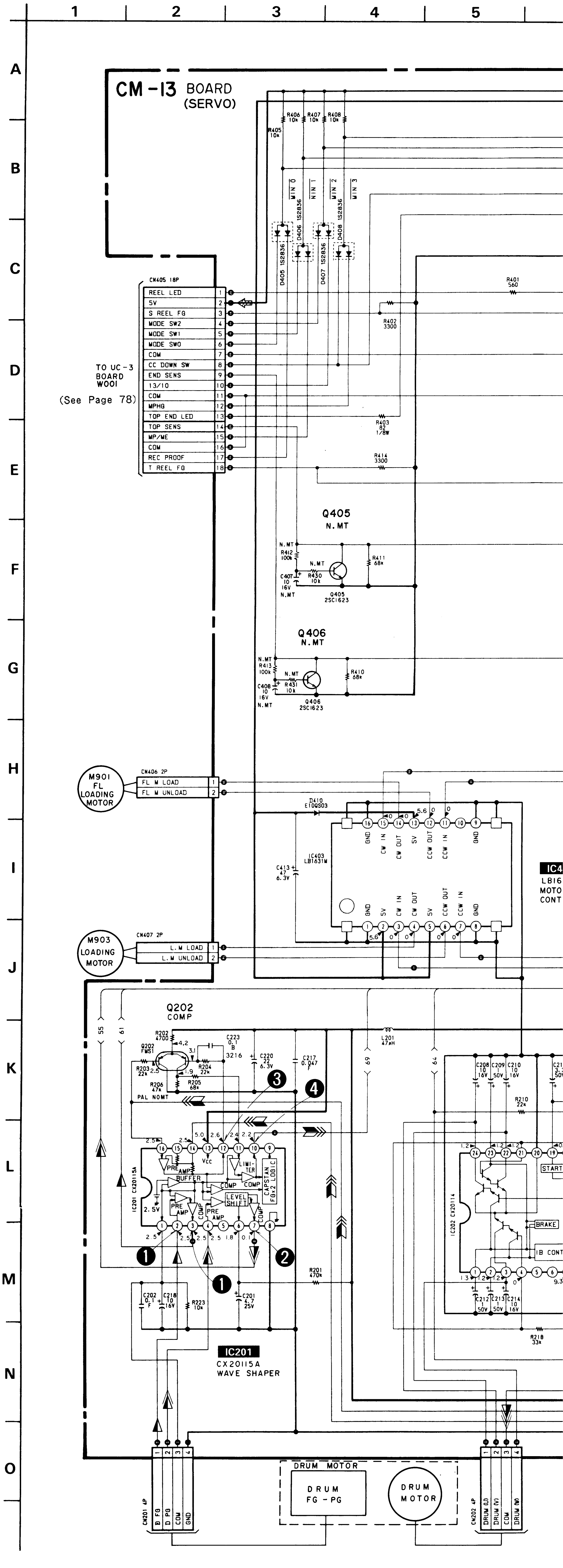
CM-13 (SERVO), CC-23 (TRANSLATION) SCHEMATIC DIAGRAMS

—Ref. No. CM-13 BOARD : 2,000 Series, CC-23 BOARD : 2,600 Series, —

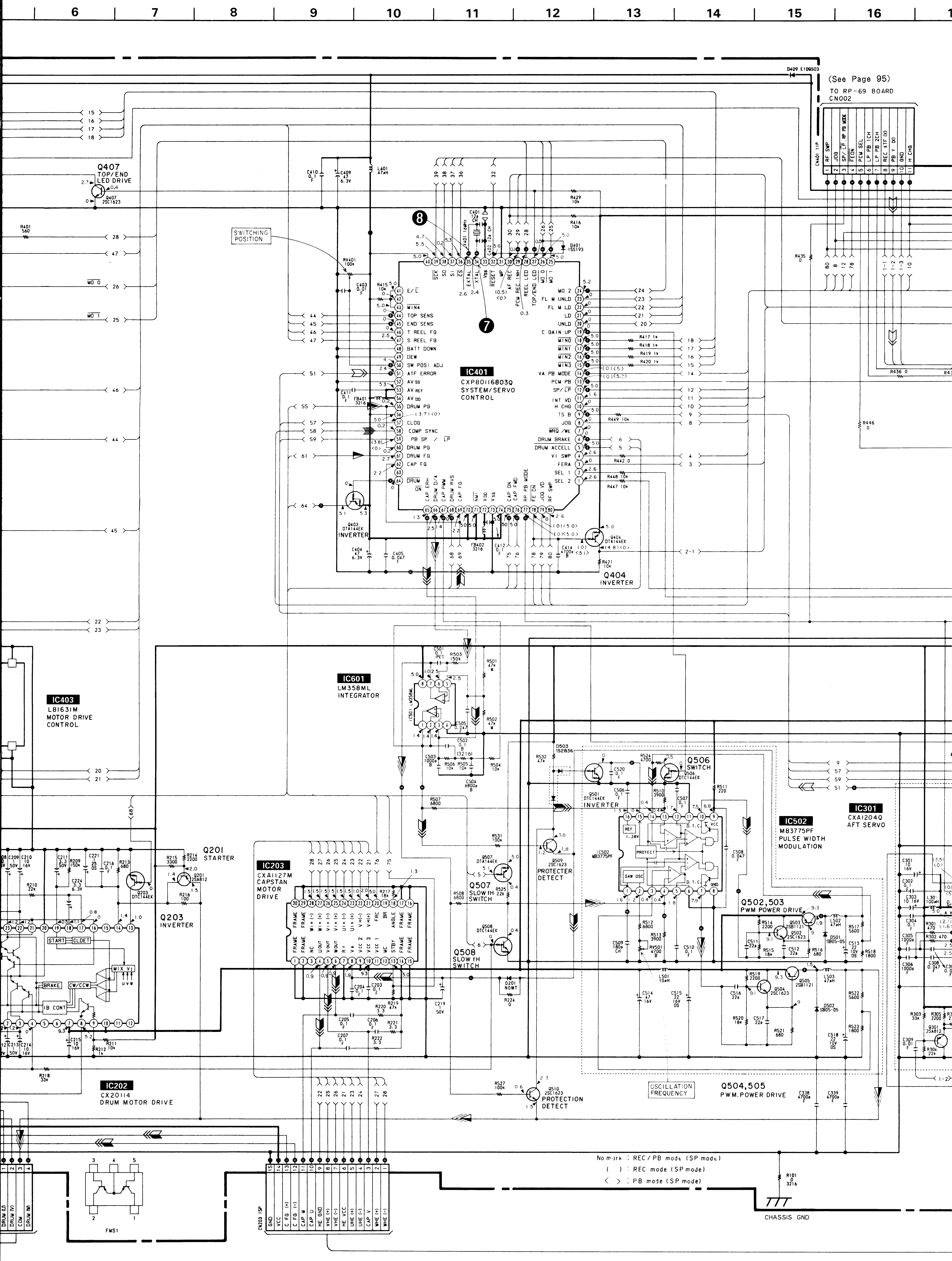
- Signal path

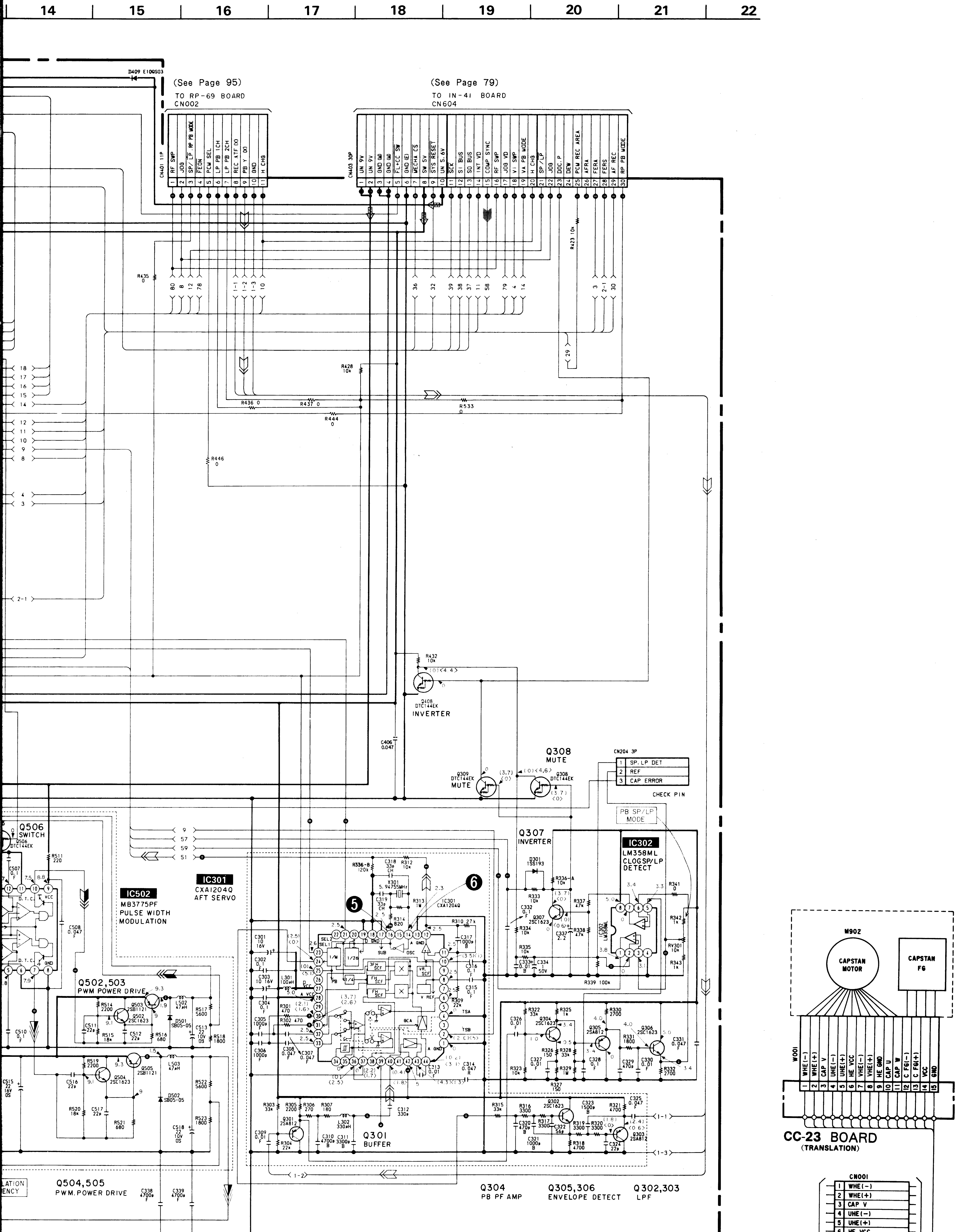
	REC	REC/PB	PB
Drum speed servo		▶	
Drum phase servo		⪢	
Drum servo (speed and phase)		⋙	
Capstan phase servo			⪢
Capstan servo (speed and phase)		⋙	
Ref. signal	▶		

When indicating parts by reference number, please include the board name.



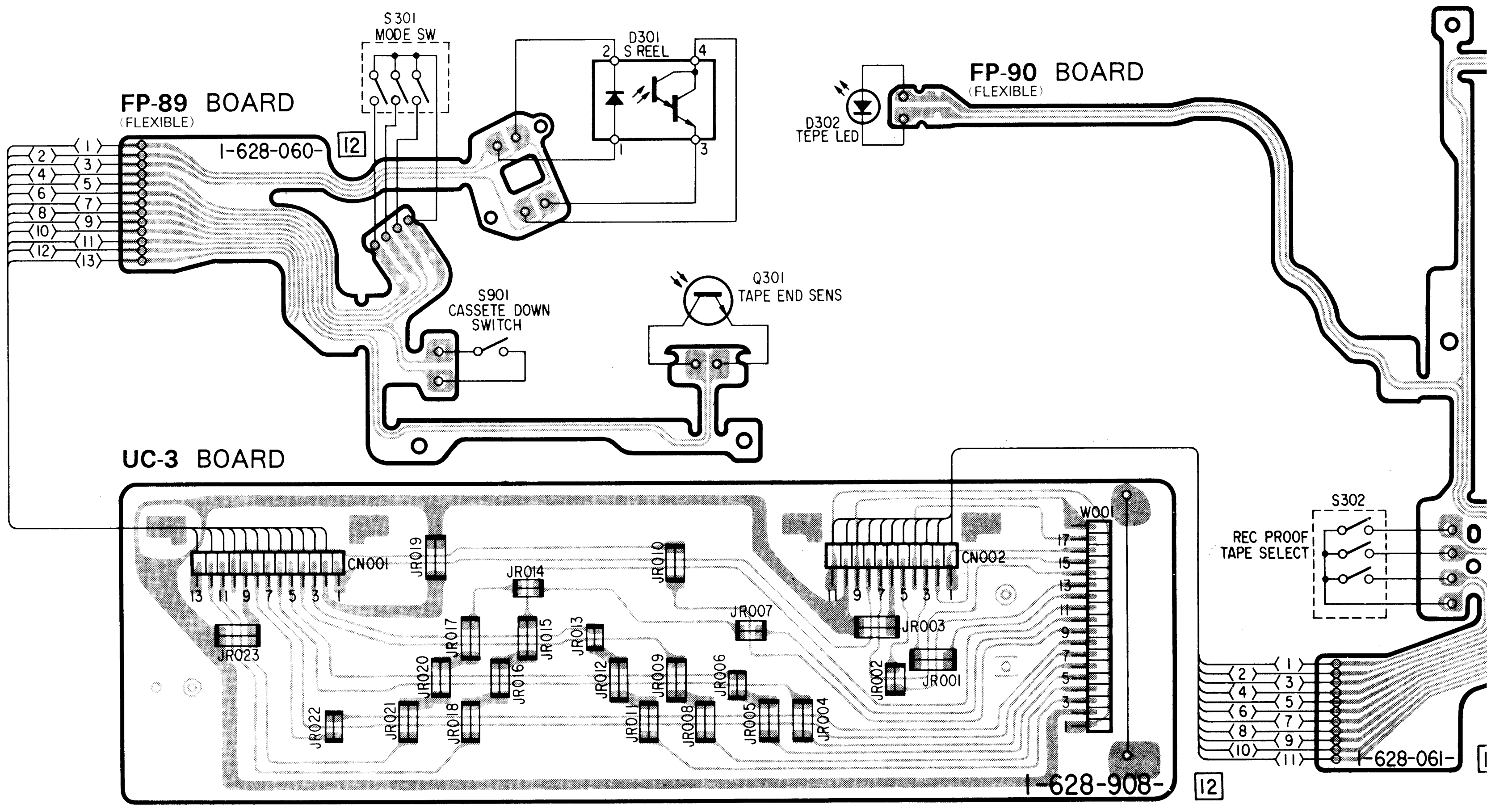
1
2
3
4
5
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
CM-13 BOARD (SERVO)
R406 10k
R407 10k
R408 10k
R405 10k
MIN 0
MIN 1
MIN 2
MIN 3
D405 1S2836
D406 1S2836
D407 1S2836
D408 1S2836
CN405 18P
REEL LED
SV
S REEL FG
MODE SW2
MODE SW1
MODE SW0
COM
CC DOWN SW
END SENS
13/10
COM
MPHG
TOP END LED
TOP SENS
MP/ME
COM
REC PROOF
T REEL FG
TO UC-3 BOARD W001
(See Page 78)
R401 560
R402 3300
R403 82 1/8W
R414 3300
Q405 N.MT
R412 100k
R430 10k
C407 10 16V
R411 68k
Q405 2SC1623
Q406 N.MT
R413 100k
R431 10k
C408 10 16V
R410 68k
Q406 2SC1623
M901 FL LOADING MOTOR
CN406 2P
FL M LOAD
FL M UNLOAD
D410 E10QS03
IC403 LB1631M
C413 47 6.3V
GND
CW IN
CW OUT
5V
CCW OUT
CCW IN
IC4
LB16
MOTO
CONT
M903 LOADING MOTOR
CN407 2P
L.M LOAD
L.M UNLOAD
Q202 COMP
R202 4700
C223 0.1 B
C220 22 6.3V
C217 0.047 F
Q202 FMS1
R203 22k
R204 22k
R205 68k
R206 47k
PAL NOMT
L201 47μH
PRE AMP
BUFFER
VCC
LIMITER
COMP
CAPSTAN FG÷2 LOGIC
LEVEL SHIFT
IC201 CX20115A
C202 0.1 F
C218 10 16V
R223 10k
C201 4.7 25V
R201 470k
IC201
CX20115A
WAVE SHAPER
C208 10 16V
C209 10 50V
C210 10 16V
R210 22k
START
BRAKE
IB CONT
IC202 CX20114
C212 50V
C213 50V
C214 10 16V
R218 33k
CN201 4P
D FG
D PG
COM
GND
DRUM MOTOR
DRUM FG-PG
DRUM MOTOR
CN202 4P
DRUM (U)
DRUM (V)
COM
DRUM (W)


6
7
8
9
10
11
12
13
14
15
16
(See Page 95)
TO RP-69 BOARD
CN002
CN401 11P
RF SWP
JOG
SP/LP PB MODE
FEON
PCM SEL
LP PB 1CH
LP PB 2CH
REC ATF (X)
PB Y (X)
GND
H CHG
Q407
TOP/END
LED DRIVE
2SC1623
SWITCHING
POSITION
RV401
100k
L401
47μH
IC401
CXP80116803Q
SYSTEM/SERVO
CONTROL
E/L
MIN4
TOP SENS
END SENS
T REEL FG
S REEL FG
BATT DOWN
DEW
SW POSI ADJ
ATF ERROR
AV SS
AV REF
AV DD
DRUM PG
CLOG
COMP SYNC
PB SP / LP
DRUM PG
DRUM FG
CAP FG
DRUM ON
CAP EHH
DRUM D/A
CAP PWM
DRUM RVS
CAP FG
NMI
VDD
VSS
CAP ON
CAP FWD
RP PB MODE
FE ON
JOG VD
RF SWP
SCK
SO
SI
CS
EXTAL
XTAL
VSS
RESET
AF REC
PCM REC INH
REEL LED
TOP/END LED
MO 0
MO 1
MO 2
FL M UNLD
FL M LD
LD
UNLD
C GAIN UP
MIN0
MIN1
MIN2
MIN3
VA PB MODE
PCM PB
SP/LP
INT VD
H CHG
TS B
JOG
WRQ /WE
DRUM BRAKE
DRUM ACCELL
V1 SWP
FERA
SEL 1
SEL 2
Q403
DTA144EK
INVERTER
Q404
DTA144EK
INVERTER
D401
1SS193
IC601
LM358ML
INTEGRATOR
IC403
LB1631M
MOTOR DRIVE
CONTROL
Q201
STARTER
2SA812
Q203
INVERTER
DTC144EK
IC203
CXA1127M
CAPSTAN
MOTOR
DRIVE
FRAME
Win (-)
Win (+)
Vin (-)
Vin (+)
Uin (-)
Uin (+)
VH(+)
FRC
BR
ANGLE
NC
UOUT
VOUT
WOUT
RF
Vs
VCC 2
VCC 3
MC
STBY
START
CLDET
MIX VI
BRAKE
CW/CCW
IB CONT
IC202
CX20114
DRUM MOTOR DRIVE
Q507
SLOW fH
SWITCH
Q508
SLOW fH
SWITCH
Q509
2SC1623
PROTECTER
DETECT
Q510
2SC1623
PROTECTION
DETECT
D503
1S2836
D201
NOMT
Q501
DTC144EK
INVERTER
Q506
SWITCH
DTC144EK
IC502
MB3775PF
PULSE WIDTH
MODULATION
REF
1.28V
PROTECT
SAW OSC
D.T.C.
VCC
GND
Q502,503
PWM POWER DRIVE
Q504,505
PWM.POWER DRIVE
OSCILLATION
FREQUENCY
D501
SB05-05
D502
SB05-05
IC301
CXA1204Q
AFT SERVO
D409 E10QS03
No mark : REC/PB mode (SP mode)
( ) : REC mode (SP mode)
< > : PB mode (SP mode)
R101
0
3216
CHASSIS GND
FMS1
CN203 15P
GND
VCC
C FG (+)
C FG (-)
CAP W
CAP U
HE GND
VHE (+)
VHE (-)
HE VCC
UHE (+)
UHE (-)
CAP V
WHE (+)
WHE (-)
DRUM (U)
DRUM (V)
COM
DRUM (W)

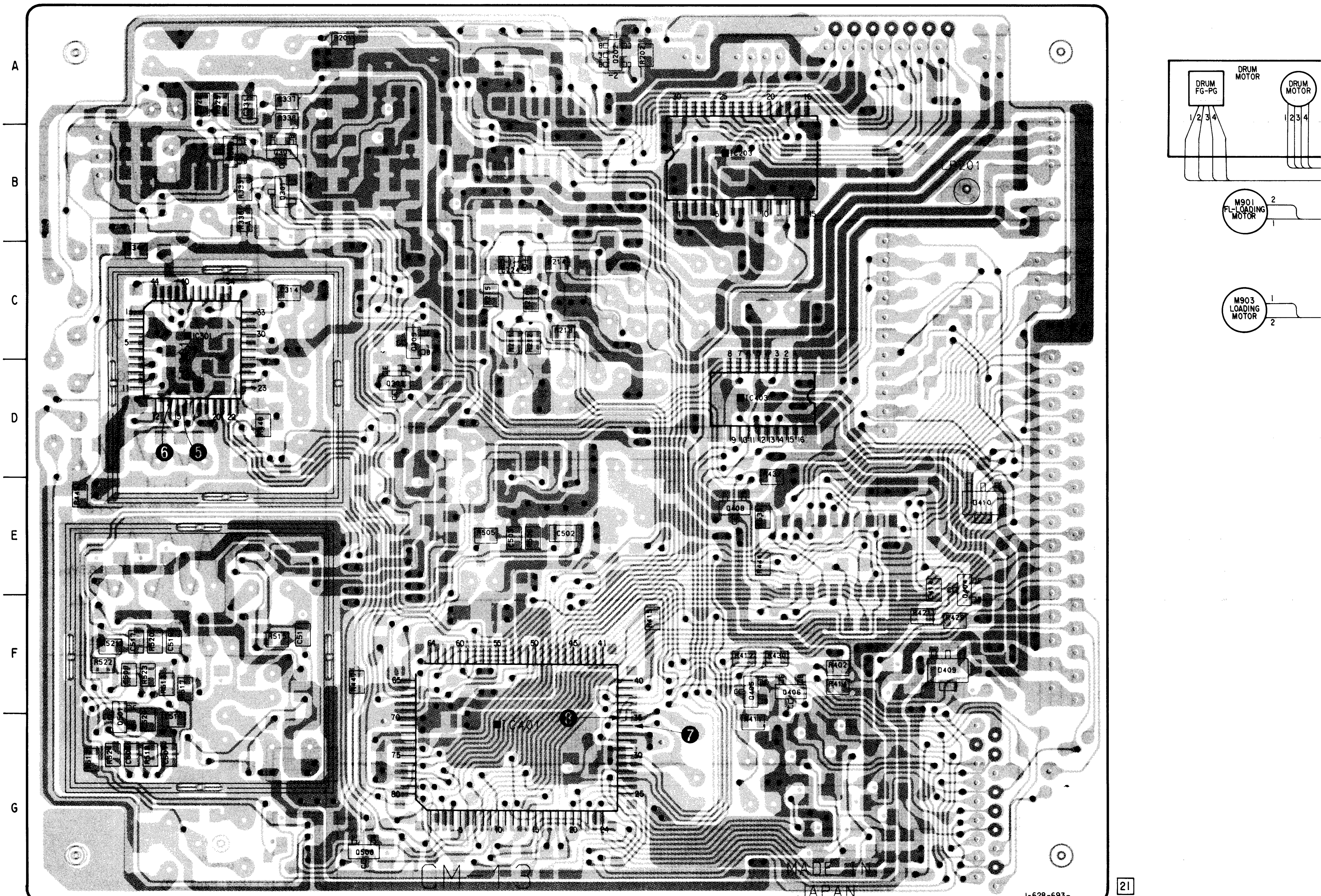

14
15
16
17
18
19
20
21
22
D409 E10QS03
(See Page 95)
TO RP-69 BOARD
CN002
(See Page 79)
TO IN-41 BOARD
CN604
CN401 11P
1 RF SWP
2 JOG
3 SP/LP RP PB MODE
4 FEDN
5 PCM SEL
6 LP PB 1CH
7 LP PB 2CH
8 REC ATF (X)
9 PB Y (X)
10 GND
11 H CHG
CN403 30P
1 UN 9V
2 UN 9V
3 GND (M)
4 GND (M)
5 FL+CC SW
6 GND (E)
7 MECHA CS
8 SW 5V
9 SYS RESET
10 UN 5.6V
11 SCK
12 SI BUS
13 SO BUS
14 INT VD
15 COMP SYNC
16 RF SWP
17 JOG VD
18 VI SWP
19 VA PB MODE
20 H CHG
21 SP/LP
22 JOG
23 DOC. P
24 DEW
25 PCM REC AREA
26 AFRA
27 FERA
28 FERS
29 AF REC
30 RP PB MODE
R423 10k
R435 0
R428 10k
R436 0
R437 0
R444 0
R533 0
R446 0
R432 10k
Q408 DTC144EK
INVERTER
C406 0.047
Q308
MUTE
Q309 DTC144EK
MUTE
Q308 DTC144EK
CN204 3P
1 SP.LP DET
2 REF
3 CAP ERROR
CHECK PIN
PB SP/LP MODE
Q307
INVERTER
IC302
LM358ML
CLOGSP/LP DETECT
Q506
SWITCH
Q506 DTC144EK
IC502
MB3775PF
PULSE WIDTH MODULATION
IC301
CXA1204Q
AFT SERVO
Q502,503
PWM POWER DRIVE
Q504,505
PWM.POWER DRIVE
X301 5.94755MHz
Q301
BUFFER
Q304
PB PF AMP
Q305,306
ENVELOPE DETECT
Q302,303
LPF
R101 0 3216
CHASSIS GND
M902
CAPSTAN MOTOR
CAPSTAN FG
W001
CC-23 BOARD
(TRANSLATION)
CN001
1 WHE(-)
2 WHE(+)
3 CAP V
4 UHE(-)
5 UHE(+)
6 HE VCC
7 VHE(-)
8 VHE(+)
9 HE GND
10 CAP U
11 CAP W
12 C FG(-)
13 C FG(+)
14 VCC
15 GND
odε (SP mode)
(SP mode)
SP mode)
LATION
ENCY

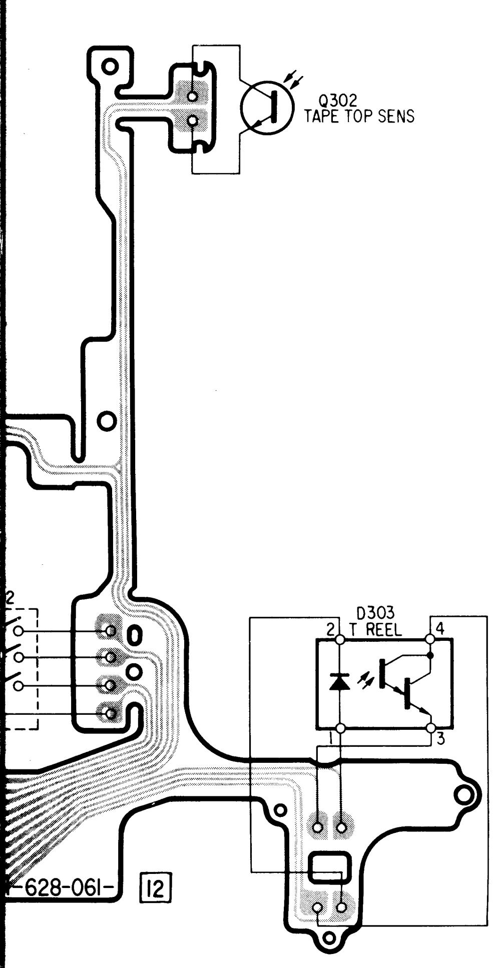
UC-3 (TRANSLATION), FP-89 (S REEL SENSOR), FP-90 (T REEL SENSOR), CM-13 (SERVO), CC-23 (TRANSMISSION) PF

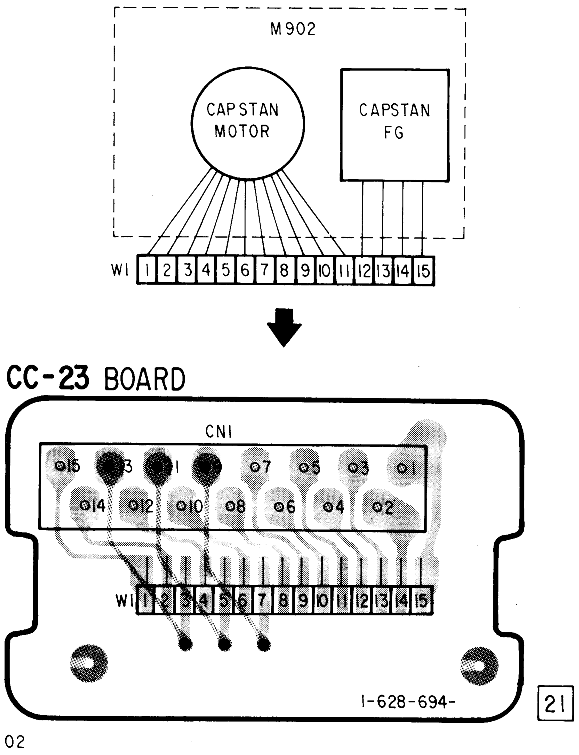
—Ref. No. UC-3, FP-89, FP-90 BOARDS : 3,000 Series, CM-13 BOARD : 2,000 Series, CC-23 BOARD : 2,600 Series—

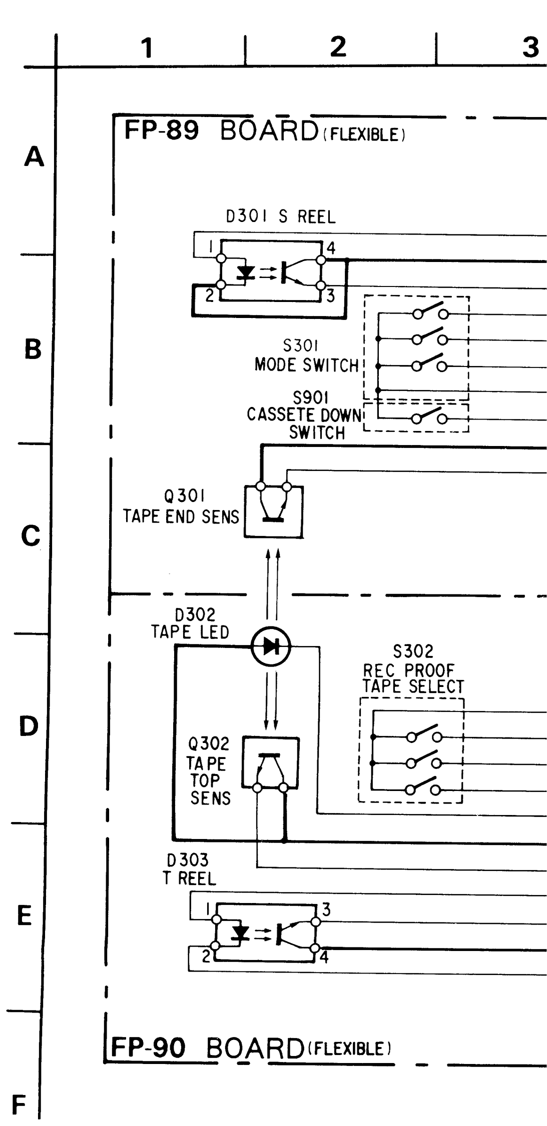

S301
MODE SW
D301
S REEL
FP-89 BOARD
(FLEXIBLE)
1-628-060-
12
D302
TEPE LED
FP-90 BOARD
(FLEXIBLE)
S901
CASSETE DOWN
SWITCH
Q301
TAPE END SENS
UC-3 BOARD
CN001
CN002
W001
JR001
JR002
JR003
JR004
JR005
JR006
JR007
JR008
JR009
JR010
JR011
JR012
JR013
JR014
JR015
JR016
JR017
JR018
JR019
JR020
JR021
JR022
JR023
1-628-908-
12
S302
REC PROOF
TAPE SELECT
1-628-061-

CM-13 BOARD (COMPONENT SIDE)

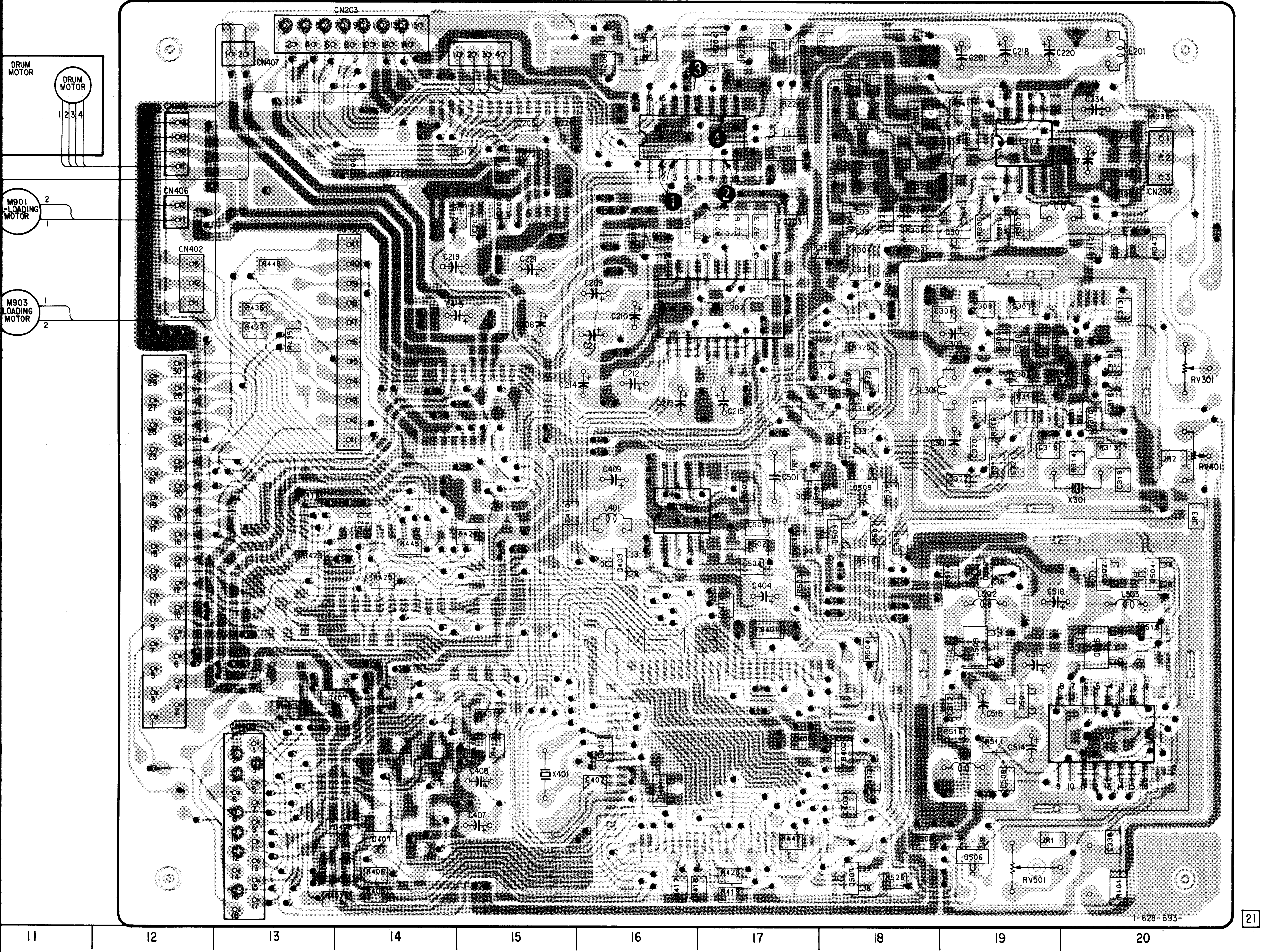

A
B
C
D
E
F
G
IC301
IC203
IC403
IC401
CM 13
MADE IN
JAPAN
1-628-693-
21
DRUM
MOTOR
DRUM
FG-PG
DRUM
MOTOR
M901
FL-LOADING
MOTOR
M903
LOADING
MOTOR
02
1
2
3
4
5
6
7
8
9
10
11


Q302
TAPE TOP SENS
D303
T REEL
-628-061-
12


M902
CAPSTAN MOTOR
CAPSTAN FG
W1
CC-23 BOARD
CN1
1-628-694-
02
21


FP-89 BOARD (FLEXIBLE)
D301 S REEL
S301 MODE SWITCH
S901 CASSETE DOWN SWITCH
Q301 TAPE END SENS
D302 TAPE LED
S302 REC PROOF TAPE SELECT
Q302 TAPE TOP SENS
D303 T REEL
FP-90 BOARD (FLEXIBLE)

CM-13 BOARD (CONDUCTOR SIDE)

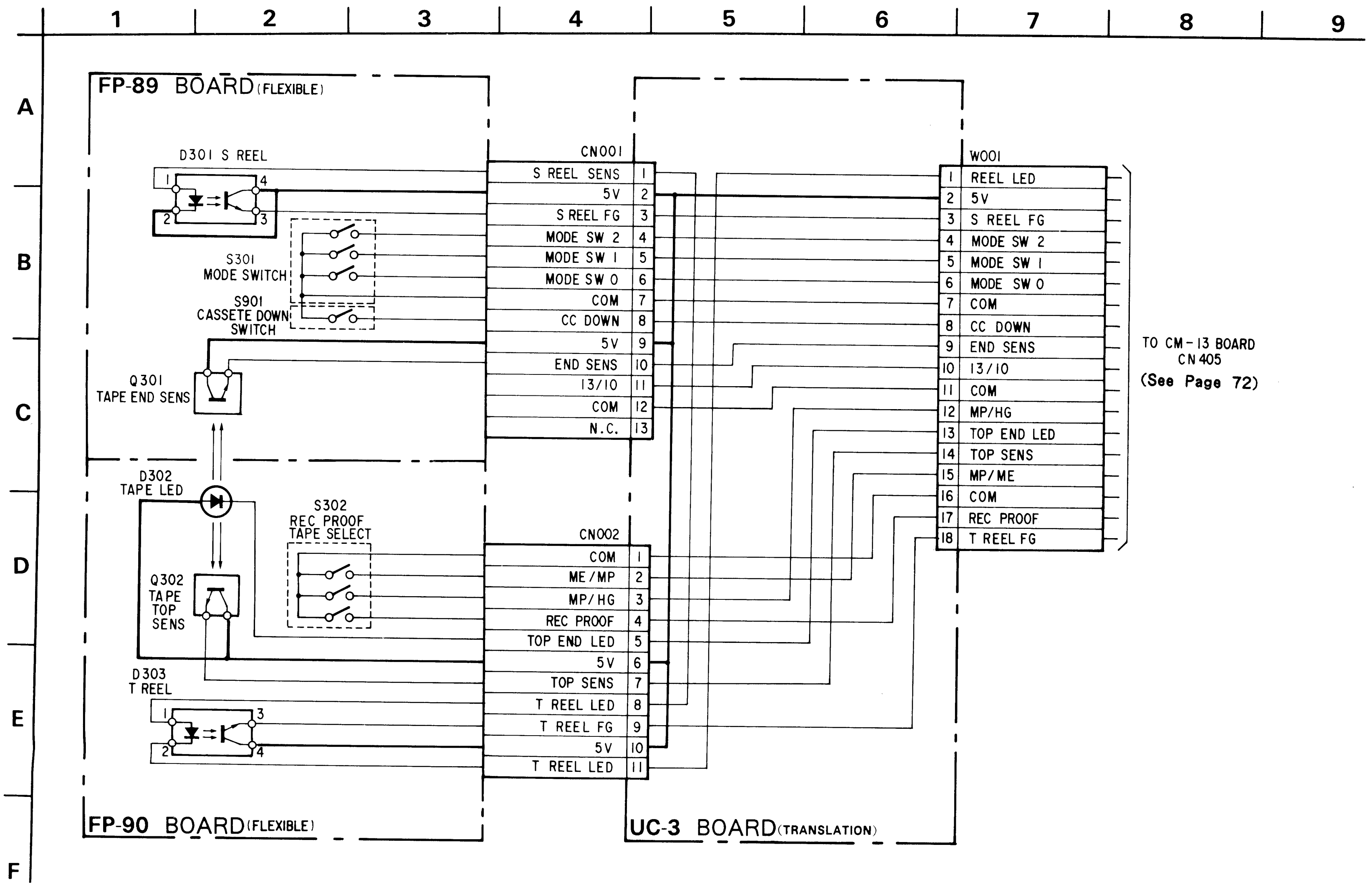

DRUM MOTOR
M901 LOADING MOTOR
M903 LOADING MOTOR
CN203
CN407
CN202
CN406
CN402
CN401
CN204
CN305
IC201
IC202
IC301
IC302
IC502
X301
X401
RV301
RV401
RV501
1-628-693-
21
11
12
13
14
15
16
17
18
19
20

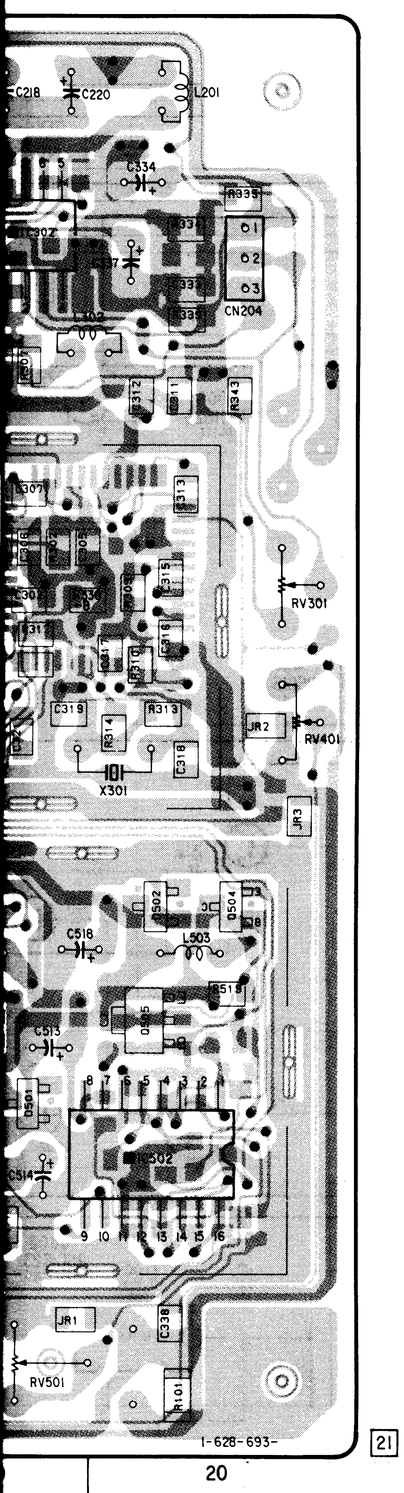
CM-13 Board

D201	B-17
D301	B-3
D401	G-16
D405	G-14
D406	G-14
D407	G-14
D408	G-14
D409	F-8
D410	E-9
D501	F-19
D502	E-20
D503	E-18
IC201	B-16
IC202	C-17
IC203	B-7
IC301	C-2
IC302	B-19
IC401	G-5
IC403	D-7
IC501	E-16
IC502	G-20
Q201	B-16
Q202	A-6
Q203	B-17
Q301	B-19
Q302	D-18
Q303	D-4
Q304	B-18
Q305	B-18
Q306	A-18
Q307	B-3
Q308	B-2
Q309	C-4
Q403	E-16
Q404	E-8
Q405	F-7
Q406	F-7
Q407	F-14
Q408	E-7
Q409	G-14
Q410	G-14
Q501	G-1
Q502	E-19
Q503	F-19
Q504	E-20
Q505	F-20
Q506	G-19
Q507	G-18
Q508	G-3
Q509	E-18
Q510	E-17

UC-3 (TRANSLATION), FP-89 (S REEL SENSOR), FP-90 (T REEL SENSOR) SCHEMATIC DIAGRAMS

—Ref. No. UC-3, FP-89, FP-90 BOARDS : 3,000 Series—

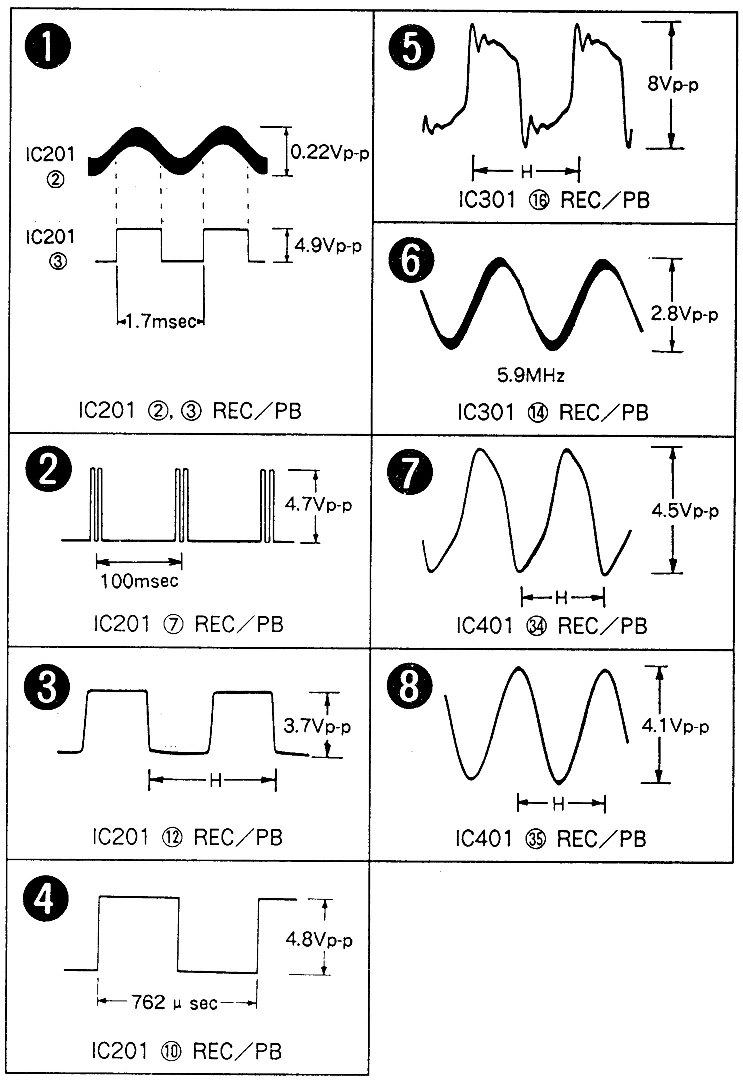

1
2
3
4
5
6
7
8
9
A
B
C
D
E
F
FP-89 BOARD (FLEXIBLE)
D301 S REEL
S301 MODE SWITCH
S901 CASSETE DOWN SWITCH
Q301 TAPE END SENS
D302 TAPE LED
S302 REC PROOF TAPE SELECT
Q302 TAPE TOP SENS
D303 T REEL
FP-90 BOARD (FLEXIBLE)
CN001
1 S REEL SENS
2 5V
3 S REEL FG
4 MODE SW 2
5 MODE SW 1
6 MODE SW 0
7 COM
8 CC DOWN
9 5V
10 END SENS
11 13/10
12 COM
13 N.C.
CN002
1 COM
2 ME/MP
3 MP/HG
4 REC PROOF
5 TOP END LED
6 5V
7 TOP SENS
8 T REEL LED
9 T REEL FG
10 5V
11 T REEL LED
UC-3 BOARD (TRANSLATION)
W001
1 REEL LED
2 5V
3 S REEL FG
4 MODE SW 2
5 MODE SW 1
6 MODE SW 0
7 COM
8 CC DOWN
9 END SENS
10 13/10
11 COM
12 MP/HG
13 TOP END LED
14 TOP SENS
15 MP/ME
16 COM
17 REC PROOF
18 T REEL FG
TO CM-13 BOARD CN405
(See Page 72)


C218
C220
L201
C334
R335
CN204
RV301
RV401
X301
JR2
C518
L503
C513
C514
JR1
RV501
1-628-693-
20
21

CM-13 Board

D201	B-17
D301	B-3
D401	G-16
D405	G-14
D406	G-14
D407	G-14
D408	G-14
D409	F-8
D410	E-9
D501	F-19
D502	E-20
D503	E-18
IC201	B-16
IC202	C-17
IC203	B-7
IC301	C-2
IC302	B-19
IC401	G-5
IC403	D-7
IC501	E-16
IC502	G-20
Q201	B-16
Q202	A-6
Q203	B-17
Q301	B-19
Q302	D-18
Q303	D-4
Q304	B-18
Q305	B-18
Q306	A-18
Q307	B-3
Q308	B-2
Q309	C-4
Q403	E-16
Q404	E-8
Q405	F-7
Q406	F-7
Q407	F-14
Q408	E-7
Q409	G-14
Q410	G-14
Q501	G-1
Q502	E-19
Q503	F-19
Q504	E-20
Q505	F-20
Q506	G-19
Q507	G-18
Q508	G-3
Q509	E-18
Q510	E-17

CM-13 BOARD



For printed wiring boards :

- o— : indicates a lead wire mounted on the componet side.
- ● : Through hole..
- ▒ : Pattern from the side which enables seeing.
- ░ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Note :

Conductor side : Parts on the conductor side being seen from the conductor are stated.

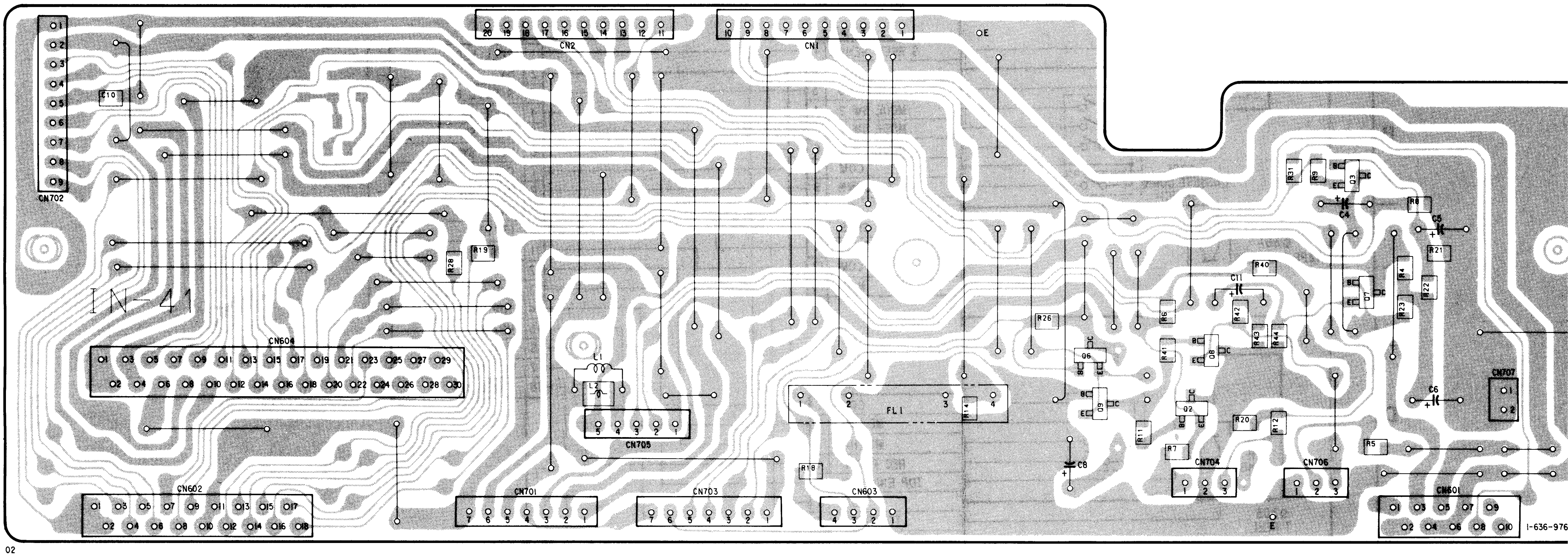
Component side : Parts on the component side being seen from the component are stated.

When indicating parts by reference number, please include the board name.

IN-41 (TRANSMISSION), FR-38 (DISPLAY CONTROL KEY) PRINTED WIRING BOARDS

—Ref. No. IN-41 BOARD : 7,000 Series, FR-38 BOARD : 6,000 Series—

IN-41 BOARD (CONDUCTOR SIDE)



CN702
CN2
CN1
IN-41
CN604
L1
L2
CN705
FL1
CN602
CN701
CN703
CN603
CN704
CN706
CN707
CN601
R10
R19
R28
R18
R26
R31
R40
R42
R43
R44
R20
R12
R11
R7
R5
R6
R8
R14
R21
R22
R23
R4
C4
C5
C6
C8
C11
Q2
Q6
Q7
Q8
Q9
E
1-636-976
02

For printed wiring boards :

- ○— : indicates a lead wire mounted on the componet side.
- ● : Through hole..
- ░ : Pattern from the side which enables seeing.
- ▓ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Note :

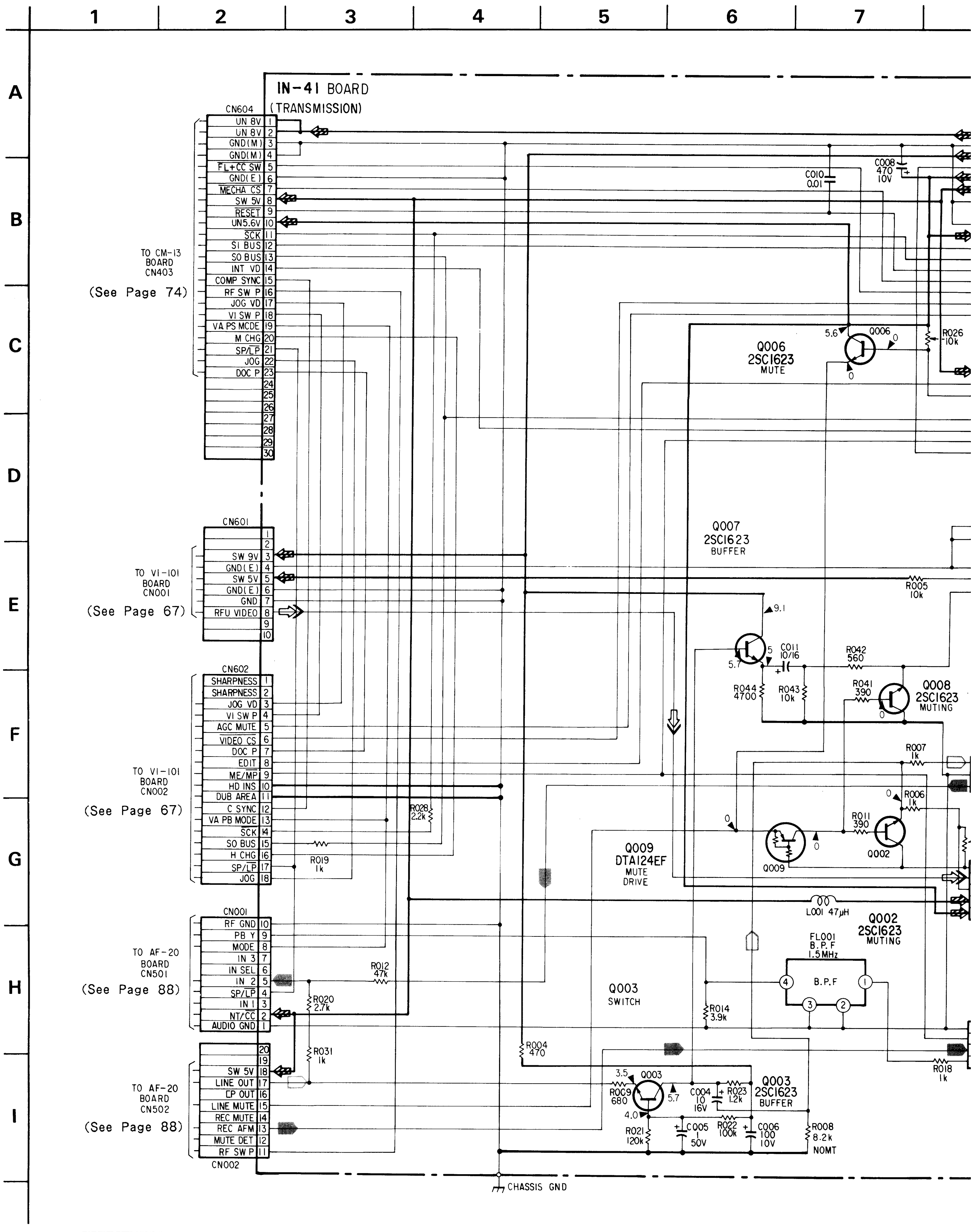
Conductor side : Parts on the conductor side being seen from the conductor are stated.

Component side : Parts on the component side being seen from the component are stated.

When indicating parts by reference number, please include the board name.

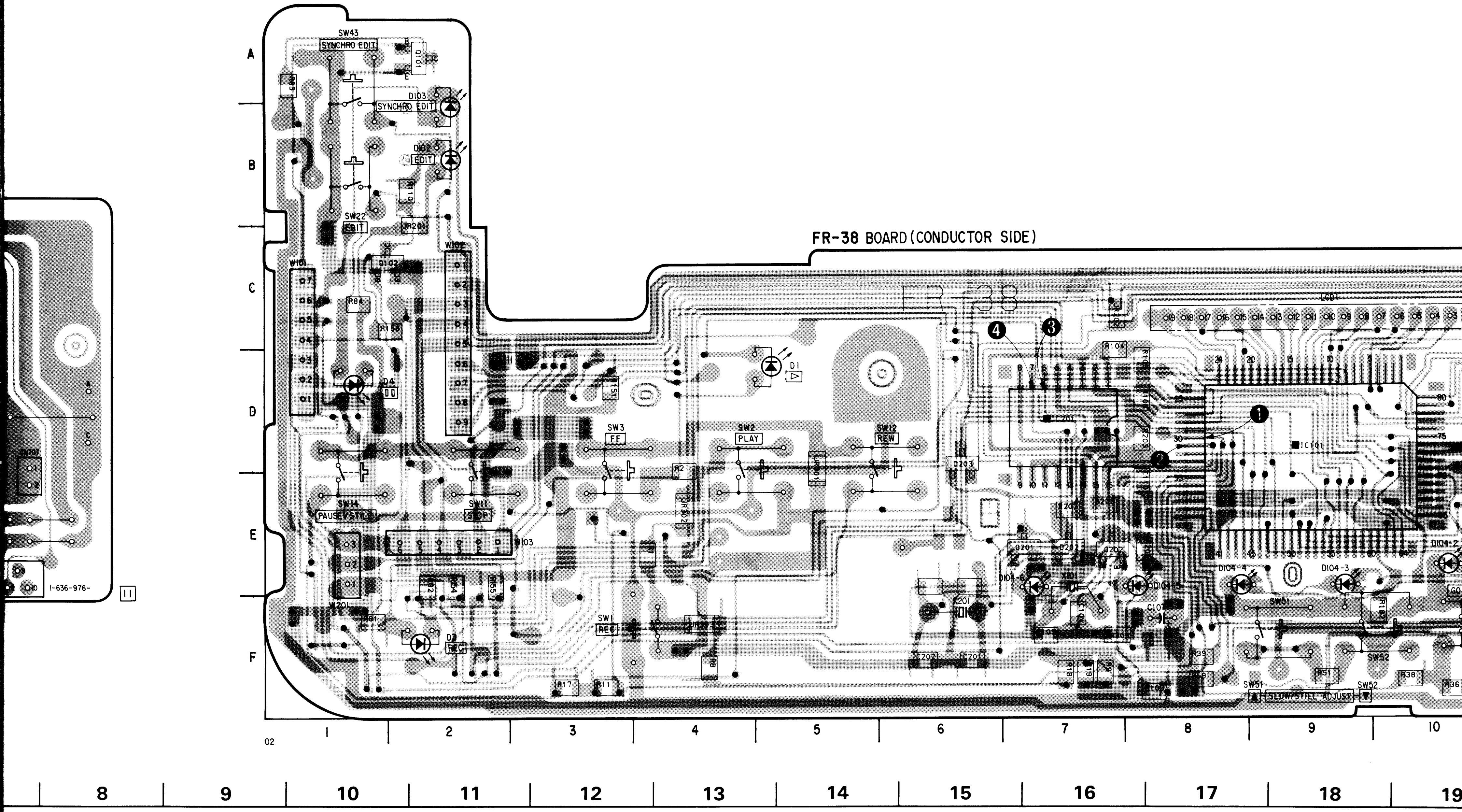
IN-41 (TRANSMISSION), FR-38 (DISPLAY CONTROL KEY) SCHEMATIC DIAGRAMS

—Ref. No. IN-41 BOARD : 7,000 Series, FR-38 BOARD : 6,000 Series—

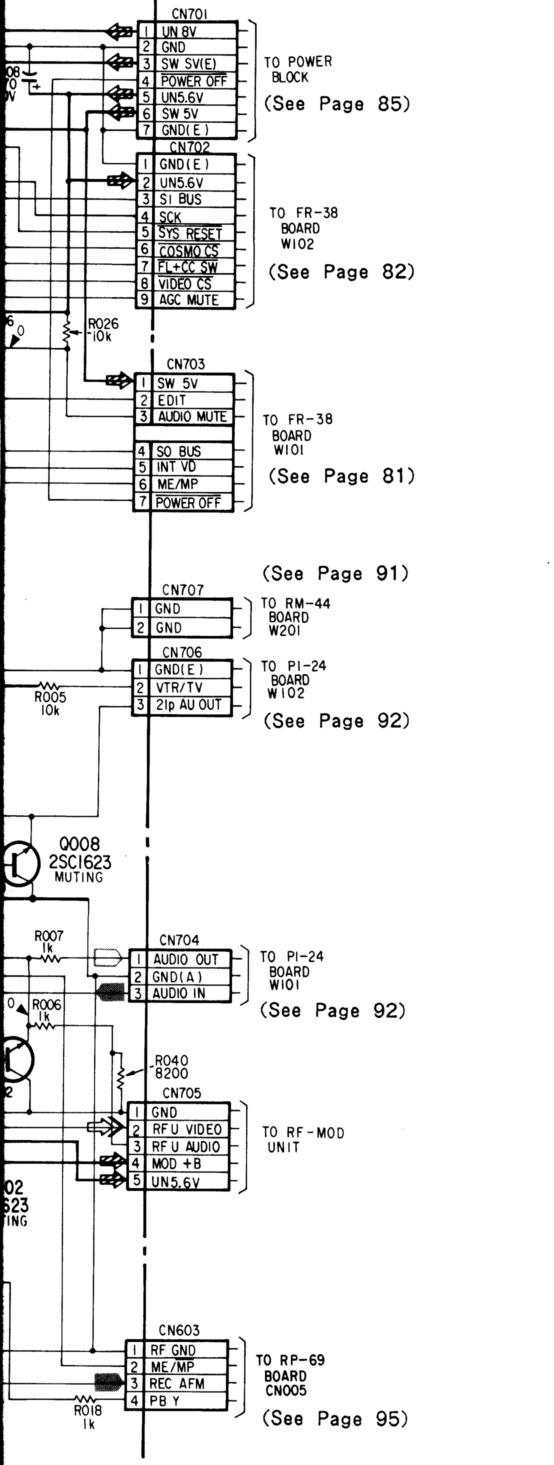


1
2
3
4
5
6
7
A
B
C
D
E
F
G
H
I
IN-41 BOARD (TRANSMISSION)
CN604
UN 8V
UN 8V
GND(M)
GND(M)
FL+CC SW
GND(E)
MECHA CS
SW 5V
RESET
UN5.6V
SCK
SI BUS
SO BUS
INT VD
COMP SYNC
RF SW P
JOG VD
VI SW P
VA PS MODE
M CHG
SP/LP
JOG
DOC P
TO CM-13 BOARD CN403
(See Page 74)
CN601
SW 9V
GND(E)
SW 5V
GND(E)
GND
RFU VIDEO
TO VI-101 BOARD CN001
(See Page 67)
CN602
SHARPNESS
SHARPNESS
JOG VD
VI SW P
AGC MUTE
VIDEO CS
DOC P
EDIT
ME/MP
HD INS
DUB AREA
C SYNC
VA PB MODE
SCK
SO BUS
H CHG
SP/LP
JOG
TO VI-101 BOARD CN002
(See Page 67)
CN001
RF GND
PB Y
MODE
IN 3
IN SEL
IN 2
SP/LP
IN 1
NT/CC
AUDIO GND
TO AF-20 BOARD CN501
(See Page 88)
SW 5V
LINE OUT
CP OUT
LINE MUTE
REC MUTE
REC AFM
MUTE DET
RF SW P
CN002
TO AF-20 BOARD CN502
(See Page 88)
C010 0.01
C008 470 10V
Q006 2SC1623 MUTE
R026 10k
Q007 2SC1623 BUFFER
R005 10k
C011 10/16
R042 560
R044 4700
R043 10k
R041 390
Q008 2SC1623 MUTING
R007 1k
R006 1k
R011 390
Q009 DTA124EF MUTE DRIVE
Q002
R028 2.2k
R019 1k
R012 47k
R020 2.7k
R031 1k
L001 47μH
Q002 2SC1623 MUTING
FL001 B.P.F 1.5MHz
B.P.F
Q003 SWITCH
R014 3.9k
R004 470
R009 680
Q003 2SC1623 BUFFER
C004 10 16V
R023 1.2k
R021 120k
C005 50V
R022 100k
C006 100 10V
R008 8.2k NOMT
R018 1k
CHASSIS GND
5.6
9.1
5.7
3.5
4.0

FR-38 BOARD (CONDUCTOR SIDE)



A
B
C
D
E
F
SW43
SYNCHRO EDIT
D103
SYNCHRO EDIT
D102
EDIT
SW22
EDIT
W101
W102
Q102
R84
R158
D4
D1
FR-38
LCD1
IC101
IC201
R104
SW3
FF
SW2
PLAY
SW12
REW
SW14
PAUSE/STILL
SW11
STOP
W103
W201
D2
REC
SW1
REC
X101
X201
C107
D104-4
D104-3
D104-2
D104-6
D104-5
SW51
SW52
SLOW/STILL ADJUST
1-636-976-
11
1
2
3
4
5
6
7
8
9
10
8
9
10
11
12
13
14
15
16
17
18
19



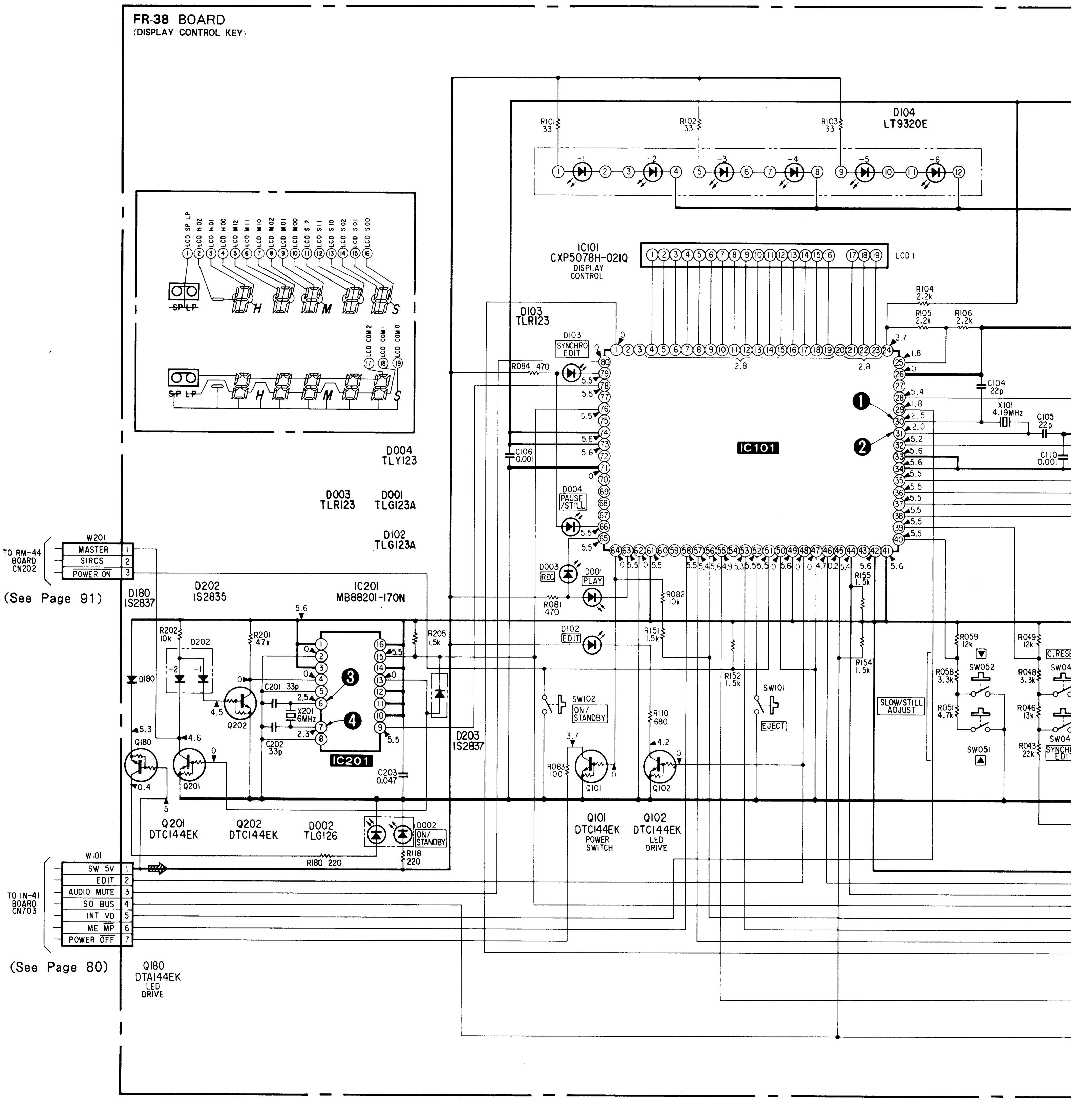
CN701
1 UN 8V
2 GND
3 SW SV(E)
4 POWER OFF
5 UN5.6V
6 SW 5V
7 GND(E)
TO POWER BLOCK
(See Page 85)
CN702
1 GND(E)
2 UN5.6V
3 SI BUS
4 SCK
5 SYS RESET
6 COSMO CS
7 FL+CC SW
8 VIDEO CS
9 AGC MUTE
TO FR-38 BOARD W102
(See Page 82)
R026 10k
CN703
1 SW 5V
2 EDIT
3 AUDIO MUTE
4 SO BUS
5 INT VD
6 ME/MP
7 POWER OFF
TO FR-38 BOARD W101
(See Page 81)
(See Page 91)
CN707
1 GND
2 GND
TO RM-44 BOARD W201
CN706
1 GND(E)
2 VTR/TV
3 21p AU OUT
TO PI-24 BOARD W102
R005 10k
(See Page 92)
Q008 2SC1623 MUTING
R007 1k
CN704
1 AUDIO OUT
2 GND(A)
3 AUDIO IN
TO PI-24 BOARD W101
R006 1k
(See Page 92)
R040 8200
CN705
1 GND
2 RFU VIDEO
3 RFU AUDIO
4 MOD +B
5 UN5.6V
TO RF-MOD UNIT
CN603
1 RF GND
2 ME/MP
3 REC AFM
4 PB Y
TO RP-69 BOARD CN005
R018 1k
(See Page 95)

- Signal path

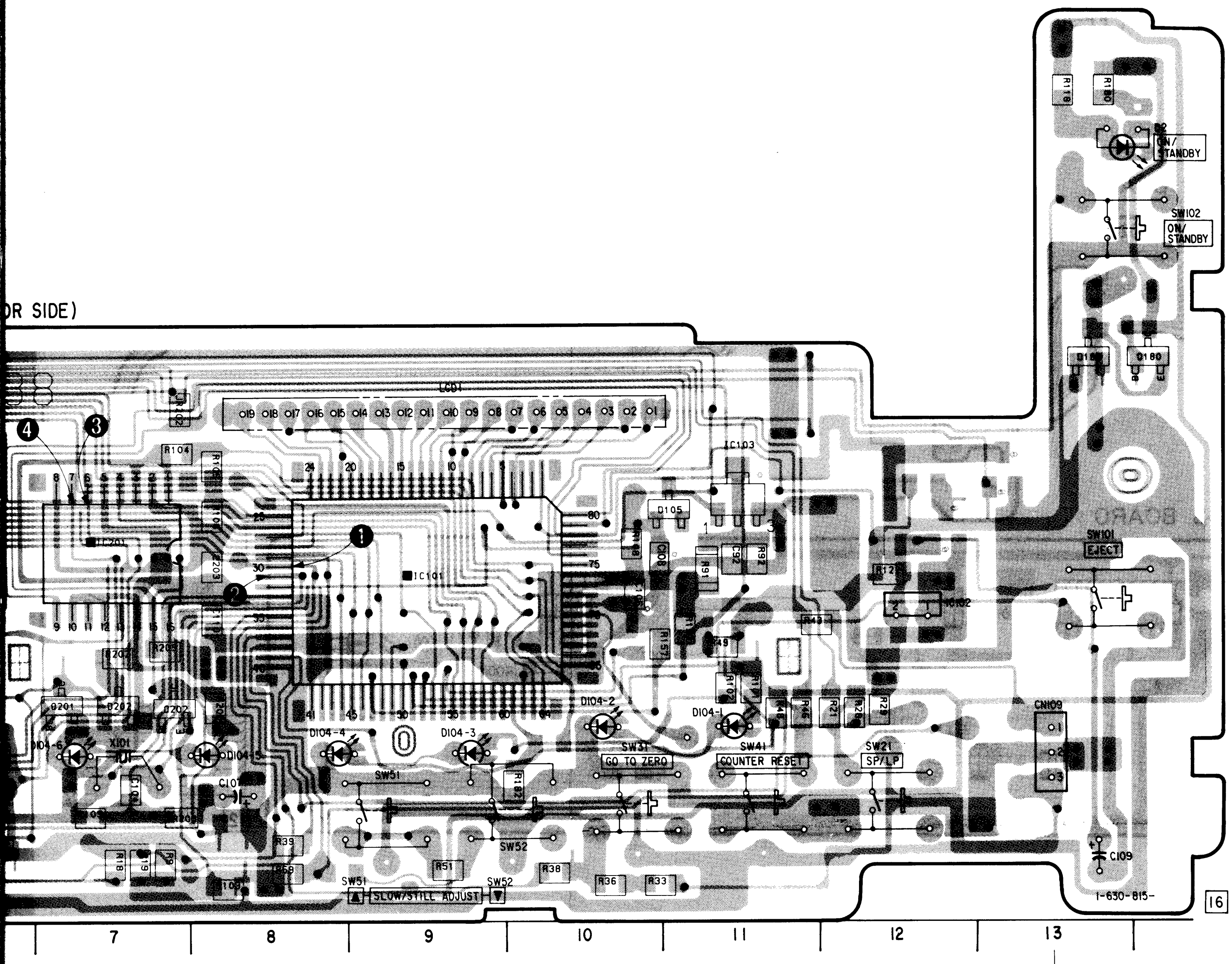
⇨ : PB Y／CHROMA Signal

➡ : REC AUDIO Signal

▷ : PB AUDIO Signal

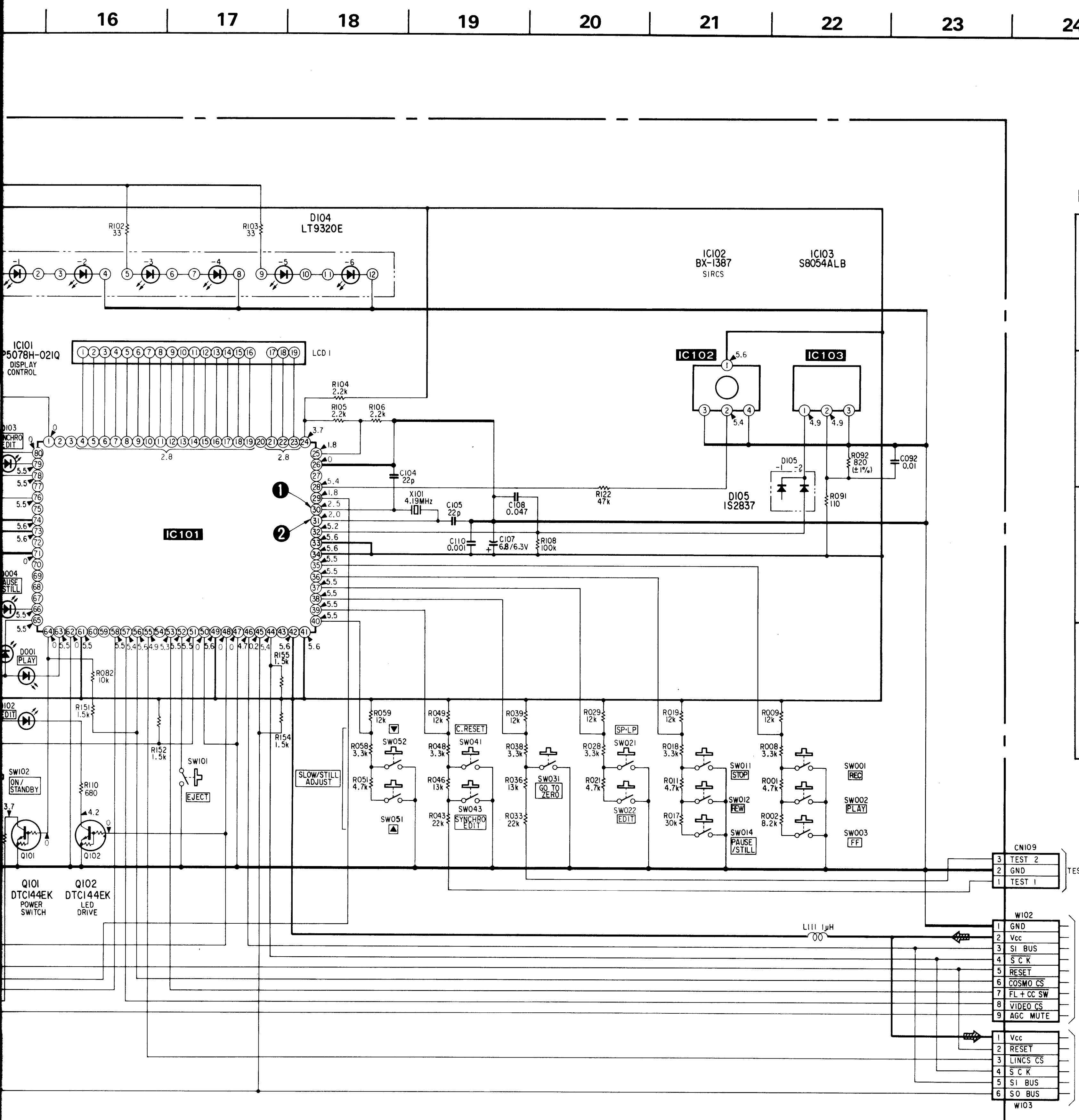


FR-38 BOARD
(DISPLAY CONTROL KEY)
LCD SP LP
LCD H02
LCD H01
LCD H00
LCD M12
LCD M11
LCD M10
LCD M02
LCD M01
LCD M00
LCD S12
LCD S11
LCD S10
LCD S02
LCD S01
LCD S00
LCD COM2
LCD COM1
LCD COM0
SP LP
H
M
S
R101 33
R102 33
R103 33
D104 LT9320E
IC101 CXP5078H-021Q DISPLAY CONTROL
LCD1
D103 TLR123
D103 SYNCHRO EDIT
R084 470
R104 2.2k
R105 2.2k
R106 2.2k
C104 22p
X101 4.19MHz
C105 22p
C110 0.001
C106 0.001
IC101
D004 TLY123
D003 TLR123
D001 TLG123A
D102 TLG123A
D004 PAUSE/STILL
D003 REC
D001 PLAY
R081 470
R082 10k
D102 EDIT
R151 1.5k
R152 1.5k
R154 1.5k
R155 1.5k
SW102 ON/STANDBY
SW101 EJECT
R110 680
R083 100
Q101
Q102
Q101 DTC144EK POWER SWITCH
Q102 DTC144EK LED DRIVE
SLOW/STILL ADJUST
R059 12k
SW052
R058 3.3k
R051 4.7k
SW051
R049 12k
R048 3.3k
R046 13k
R043 22k
SW04
C.RESE
SYNCH EDIT
TO RM-44 BOARD CN202
W201
1 MASTER
2 SIRCS
3 POWER ON
(See Page 91)
D180 IS2837
D202 IS2835
IC201 MB88201-170N
R202 10k
R201 47k
C201 33p
X201 6MHz
C202 33p
R205 1.5k
C203 0.047
D203 IS2837
D180
Q180
Q201
Q202
Q201 DTC144EK
Q202 DTC144EK
D002 TLG126
D002 ON/STANDBY
R180 220
R118 220
IC201
W101
1 SW 5V
2 EDIT
3 AUDIO MUTE
4 SO BUS
5 INT VD
6 ME MP
7 POWER OFF
TO IN-41 BOARD CN703
(See Page 80)
Q180 DTA144EK LED DRIVE
❶
❷
❸
❹

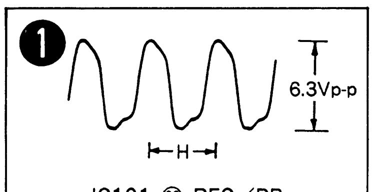

R SIDE)
LCD1
IC101
IC103
IC102
D105
D104-1
D104-2
D104-3
D104-4
D104-5
D104-6
X101
SW101 EJECT
SW102 ON/STANDBY
D2 ON/STANDBY
SW31 GO TO ZERO
SW41 COUNTER RESET
SW21 SP/LP
SW51
SW52
SW51 ▲ SLOW/STILL ADJUST ▼ SW52
CN109
C109
C107
Q180
D180
R118
R180
1-630-815-
16
7
8
9
10
11
12
13

FR-38 Board

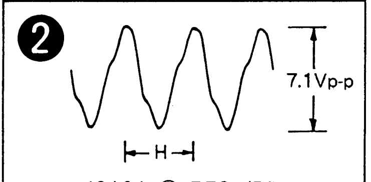
D001	D-5
D002	B-13
D003	F-2
D004	D-1
D102	B-2
D103	A-2
D105	D-11
D106	D-12
D107	E-6
D180	C-13
D202	E-7
D203	D-6
IC101	D-9
IC102	D-12
IC103	D-11
IC201	D-7
Q101	A-2
Q102	C-1
Q103	D-13
Q104	D-12
Q180	C-18
Q201	E-7
Q202	E-7
Q401	E-4


16
17
18
19
20
21
22
23
24
25
D104
LT9320E
R102 33
R103 33
IC101
P5078H-021Q
DISPLAY CONTROL
LCD1
IC102
BX-1387
SIRCS
IC103
S8054ALB
R104 2.2k
R105 2.2k
R106 2.2k
C104 22p
X101 4.19MHz
C105 22p
C108 0.047
R122 47k
D105 1S2837
R092 820 (±1%)
C092 0.01
R091 110
C110 0.001
C107 6.8/6.3V
R108 100k
D001 PLAY
D004 PAUSE STILL
D102 EDIT
D103 SYNCHRO EDIT
R082 10k
R155 1.5k
R151 1.5k
R152 1.5k
R154 1.5k
SW101 EJECT
SW102 ON/STANDBY
R110 680
Q101 DTC144EK POWER SWITCH
Q102 DTC144EK LED DRIVE
SLOW/STILL ADJUST
R059 12k
R058 3.3k
R051 4.7k
SW052 ▼
SW051 ▲
R049 12k
R048 3.3k
R046 13k
R043 22k
C.RESET
SW041
SW043 SYNCHRO EDIT
R039 12k
R038 3.3k
R036 13k
R033 22k
SW031 GO TO ZERO
R029 12k
R028 3.3k
R021 4.7k
SP-LP
SW021
SW022 EDIT
R019 12k
R018 3.3k
R011 4.7k
R017 30k
SW011 STOP
SW012 REW
SW014 PAUSE/STILL
R009 12k
R008 3.3k
R001 4.7k
R002 8.2k
SW001 REC
SW002 PLAY
SW003 FF
CN109
3 TEST 2
2 GND
1 TEST 1
TEST PIN
L111 1μH
W102
1 GND
2 Vcc
3 SI BUS
4 SCK
5 RESET
6 COSMO CS
7 FL + CC SW
8 VIDEO CS
9 AGC MUTE
TO IN-41 BOARD CN702
(See Page 80)
1 Vcc
2 RESET
3 LINCS CS
4 SCK
5 SI BUS
6 SO BUS
W103
TO RS-32 BOARD CN301
(See Page 97)

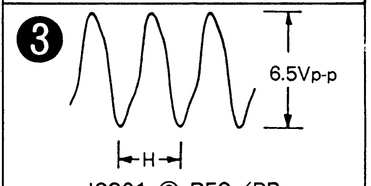
FR-38 BOARD



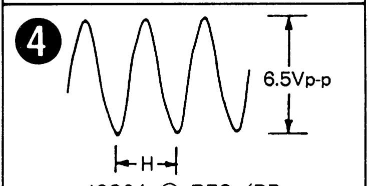
IC101 ㉚ REC/PB



IC101 ㉛ REC/PB

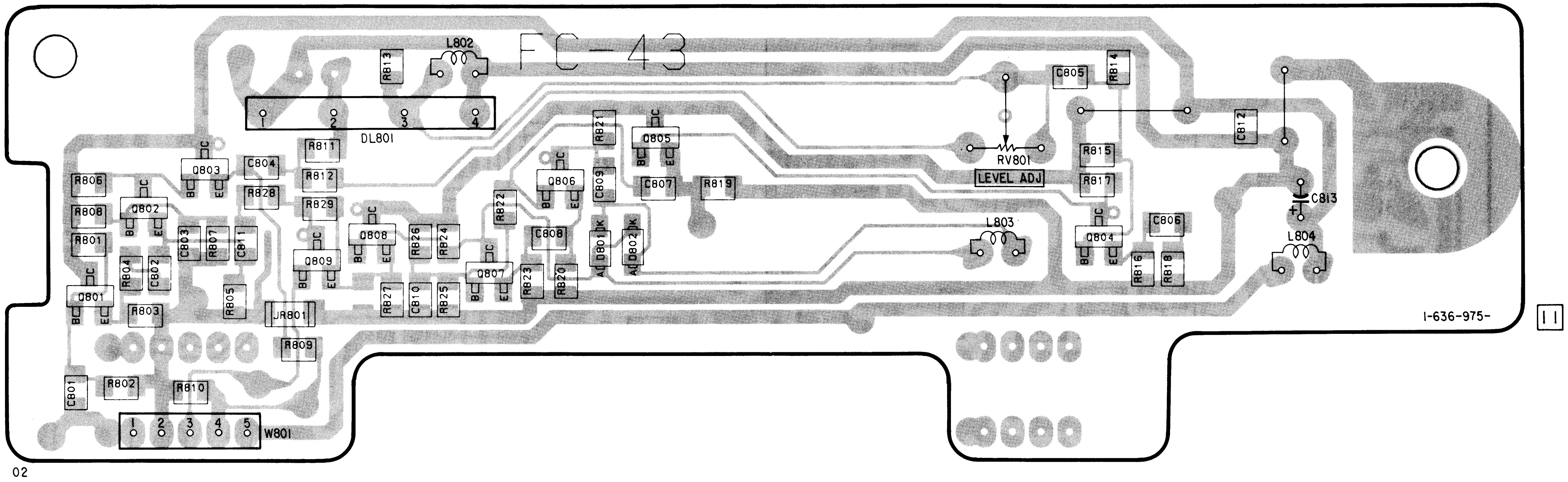


IC201 ⑥ REC/PB



IC201 ⑦ REC/PB

FC-43 BOARD (CONDUCTOR SIDE)


FC-43
L802
R813
DL801
1
2
3
4
C805
R814
Q803
C804
R811
R812
R828
R829
R806
R808
R801
Q802
C803
R807
C811
Q801
R804
C802
R803
R805
JR801
R809
C801
R802
R810
W801
1 2 3 4 5
Q808
Q809
R826
R824
Q807
R827
C810
R825
R822
R823
R820
C808
R821
Q806
C809
Q805
C807
D801
D802
A
K
R819
RV801
LEVEL ADJ
L803
R815
R817
Q804
C806
R816
R818
C812
C813
L804
B
C
E
1-636-975-
11
02

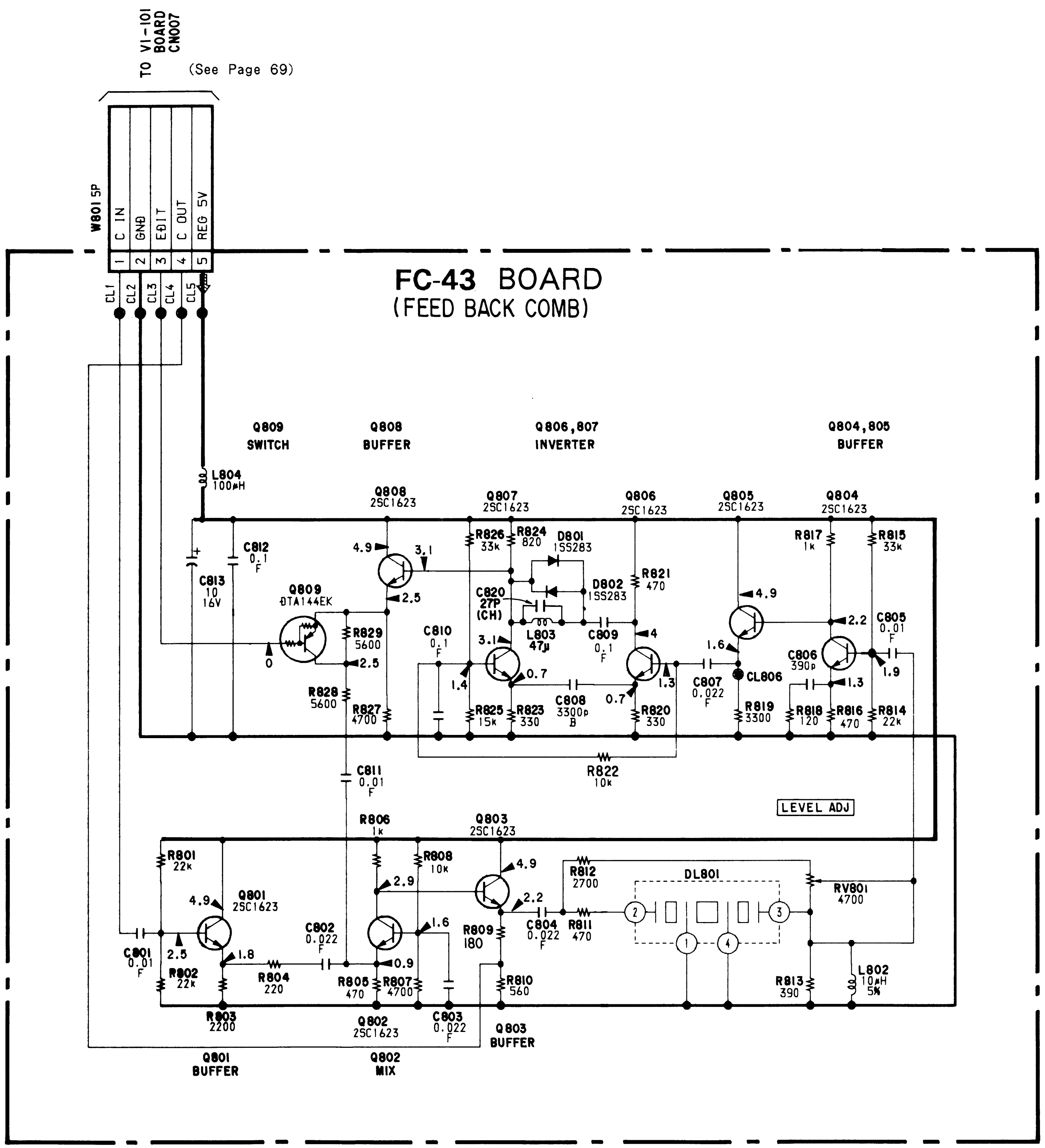
A
B
C
D
E
F
G
H
I

Note:

When
ence
the b

FC-43 (FEED BACK COMB) SCHEMATIC DIAGRAMS

—Ref. No. FC-43 BOARD : 4,000 Series—

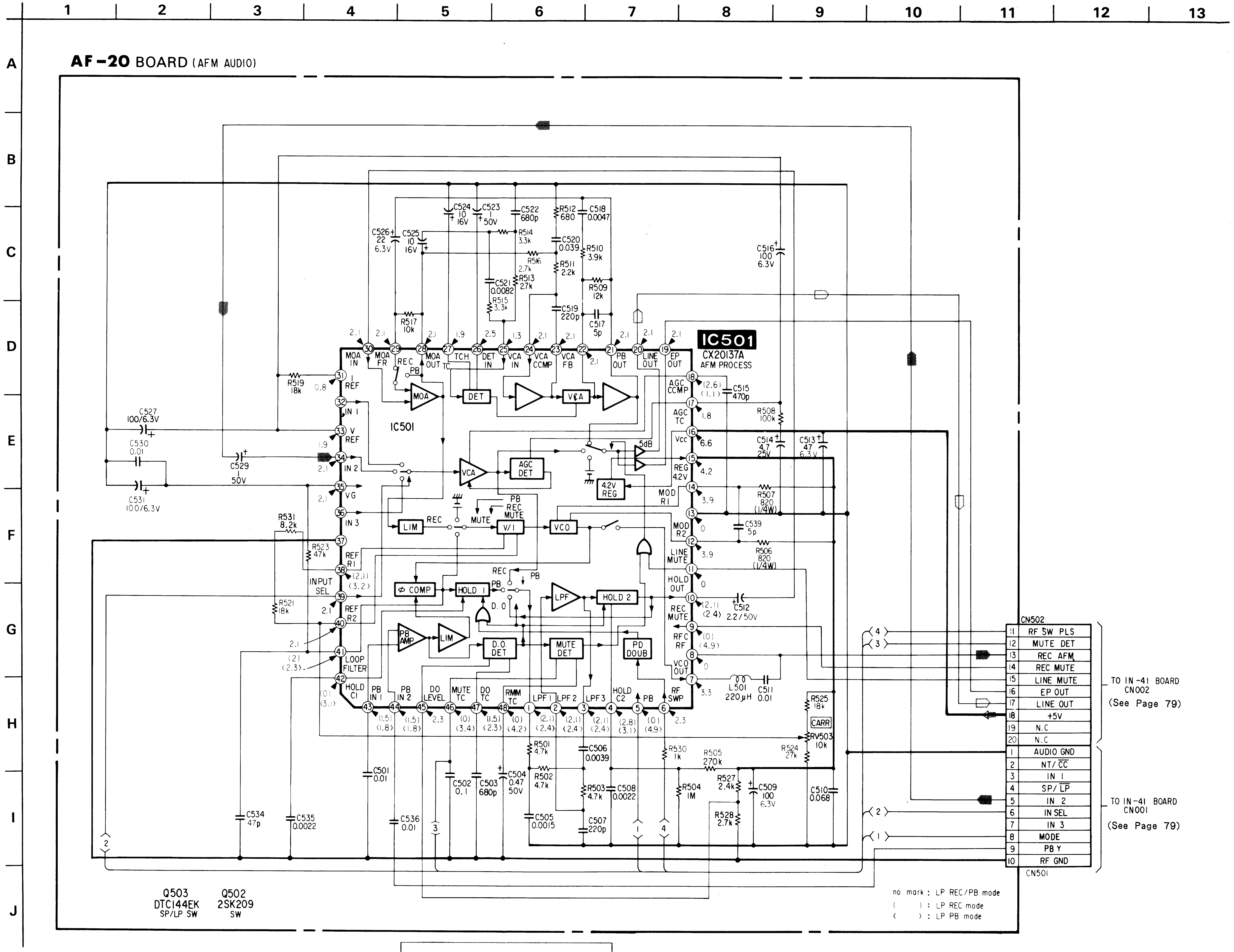

1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
TO VI-101 BOARD CN007
(See Page 69)
W8015P
1 C IN
2 GND
3 EDIT
4 C OUT
5 REG 5V
CL1
CL2
CL3
CL4
CL5
FC-43 BOARD
(FEED BACK COMB)
Q809 SWITCH
Q808 BUFFER
Q806,807 INVERTER
Q804,805 BUFFER
L804 100μH
C813 10 16V
C812 0.1 F
Q809 DTA144EK
0
R829 5600
R828 5600
R827 4700
2.5
Q808 2SC1623
4.9
3.1
2.5
Q807 2SC1623
R826 33k
R824 820
D801 1SS283
D802 1SS283
C820 27P (CH)
L803 47μ
3.1
1.4
0.7
R825 15k
R823 330
C808 3300p B
C810 0.1 F
Q806 2SC1623
R821 470
C809 0.1 F
4
0.7
1.3
R820 330
R822 10k
Q805 2SC1623
Q804 2SC1623
R817 1k
R815 33k
4.9
2.2
1.6
C807 0.022 F
CL806
R819 3300
C806 390p
C805 0.01 F
1.9
1.3
R818 120
R816 470
R814 22k
LEVEL ADJ
C811 0.01 F
R806 1k
R808 10k
Q803 2SC1623
4.9
2.9
2.2
R812 2700
DL801
2
3
1
4
RV801 4700
R801 22k
Q801 2SC1623
4.9
2.5
1.8
C801 0.01 F
R802 22k
R803 2200
R804 220
C802 0.022 F
1.6
0.9
R805 470
R807 4700
C803 0.022 F
R809 180
C804 0.022 F
R811 470
R810 560
R813 390
L802 10μH 5%
Q802 2SC1623
Q801 BUFFER
Q802 MIX
Q803 BUFFER

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

AF-20 (AFM AUDIO) SCHEMATIC DIAGRAM

—Ref. No. AF-20 BOARD : 5,000 Series—



AF-20 BOARD (AFM AUDIO)
IC501
CX20137A
AFM PROCESS
MOA IN
MOA FR
REC
PB
MOA OUT
TC
TCH
DET IN
VCA IN
VCA CCMP
VCA FB
PB OUT
LINE OUT
EP OUT
I REF
IN 1
V REF
IN 2
VG
IN 3
REF R1
INPUT SEL
REF R2
LOOP FILTER
HOLD C1
PB IN 1
PB IN 2
DO LEVEL
MUTE TC
DO TC
RMM TC
LPF 1
LPF 2
LPF 3
HOLD C2
RF SWP
AGC CCMP
AGC TC
Vcc
REG 4.2V
MOD R1
MOD R2
LINE MUTE
HOLD OUT
REC MUTE
RFC RF
VCO OUT
MOA
DET
VCA
AGC DET
42V REG
5dB
LIM
V/I
VCO
MUTE
φ COMP
HOLD 1
HOLD 2
LPF
D.O
PB AMP
D.O DET
MUTE DET
PD DOUB
C524 10 16V
C523 1 50V
C522 680p
R512 680
C518 0.0047
C526 22 6.3V
C525 10 16V
R514 3.3k
C520 0.039
R510 3.9k
R516 2.7k
R513 27k
R511 2.2k
C521 0.0082
R515 3.3k
R509 12k
C519 220p
C517 5p
R517 10k
C516 100 6.3V
C515 470p
R508 100k
C514 4.7 25V
C513 47 6.3V
R507 820 (1/4W)
C539 5p
R506 820 (1/4W)
C512 2.2/50V
L501 220μH
C511 0.01
R519 18k
C527 100/6.3V
C530 0.01
C529 1 50V
C531 100/6.3V
R531 8.2k
R523 47k
R521 18k
R525 18k
CARR
RV503 10k
R524 27k
R501 4.7k
C506 0.0039
R530 1k
R505 270k
R527 2.4k
C509 100 6.3V
C510 0.068
R502 4.7k
R503 4.7k
C508 0.0022
R504 1M
R528 2.7k
C504 0.47 50V
C505 0.0015
C507 220p
C501 0.01
C502 0.1
C503 680p
C534 47p
C535 0.0022
C536 0.01
CN502
RF SW PLS
MUTE DET
REC AFM
REC MUTE
LINE MUTE
EP OUT
LINE OUT
+5V
N.C
N.C
AUDIO GND
NT/CC
IN 1
SP/LP
IN 2
IN SEL
IN 3
MODE
PB Y
RF GND
CN501
TO IN-41 BOARD CN002 (See Page 79)
TO IN-41 BOARD CN001 (See Page 79)
Q503 DTC144EK SP/LP SW
Q502 2SK209 SW
no mark : LP REC/PB mode
( ) : LP REC mode
⟨ ⟩ : LP PB mode

- Signal path

▶ : REC AUDIO Si

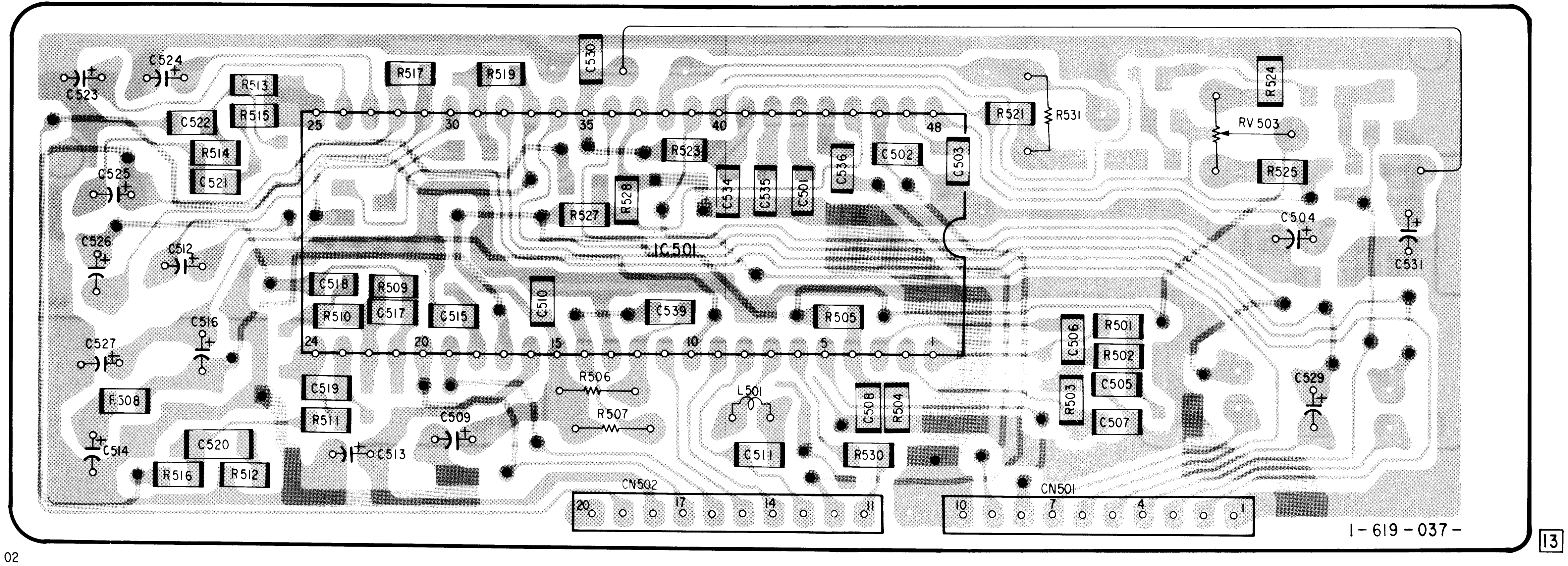
▷ : PB AUDIO Sig

When indicating parts b
ence number, please
the board name.

AF-20 (AFM AUDIO) PRINTED WIRING BOARD

—Ref. No. AF-20 BOARD : 5,000 Series—

AF-20 BOARD (CONDUCTOR SIDE)


C530
C524
C523
R513
R517
R519
R524
C522
R515
R521
R531
RV503
25
30
35
40
48
R514
R523
C502
C503
C525
C521
C534
C535
C501
C536
R525
R528
R527
C504
C526
C512
IC501
C531
C518
R509
R510
C517
C515
C510
C539
R505
R501
C506
C516
24
20
15
10
5
1
R502
C527
R506
C505
C529
R503
C519
L501
C508
R504
C507
R508
C509
R507
R511
C520
C514
C513
C511
R530
R516
R512
CN502
20
17
14
11
CN501
10
7
4
1
1-619-037-
13
02

For printed wiring boards :

- ○— : indicates a lead wire mounted on the componet side.
- ● : Through hole..
- ▨ : Pattern from the side which enables seeing.
- ░ : Pattern of the rear side.

Note :

Conductor side : Parts on the conductor side being seen from the conductor are stated.

Component side : Parts on the component side being seen from the component are stated.

When indicating parts by reference number, please include the board name.

TO IN-41 BOARD
CN002
(See Page 79)

TO IN-41 BOARD
CN001
(See Page 79)

- Signal path

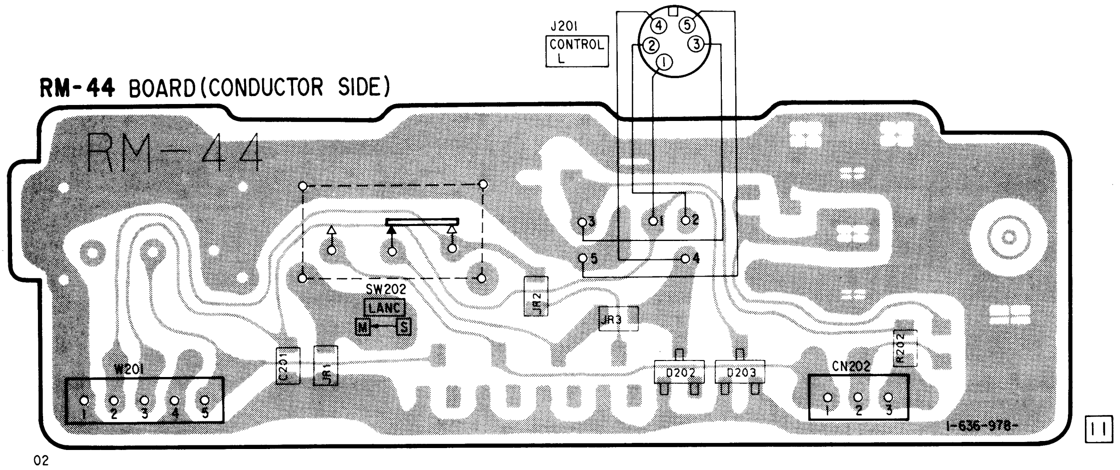
➡ : REC AUDIO Signal

▷ : PB AUDIO Signal

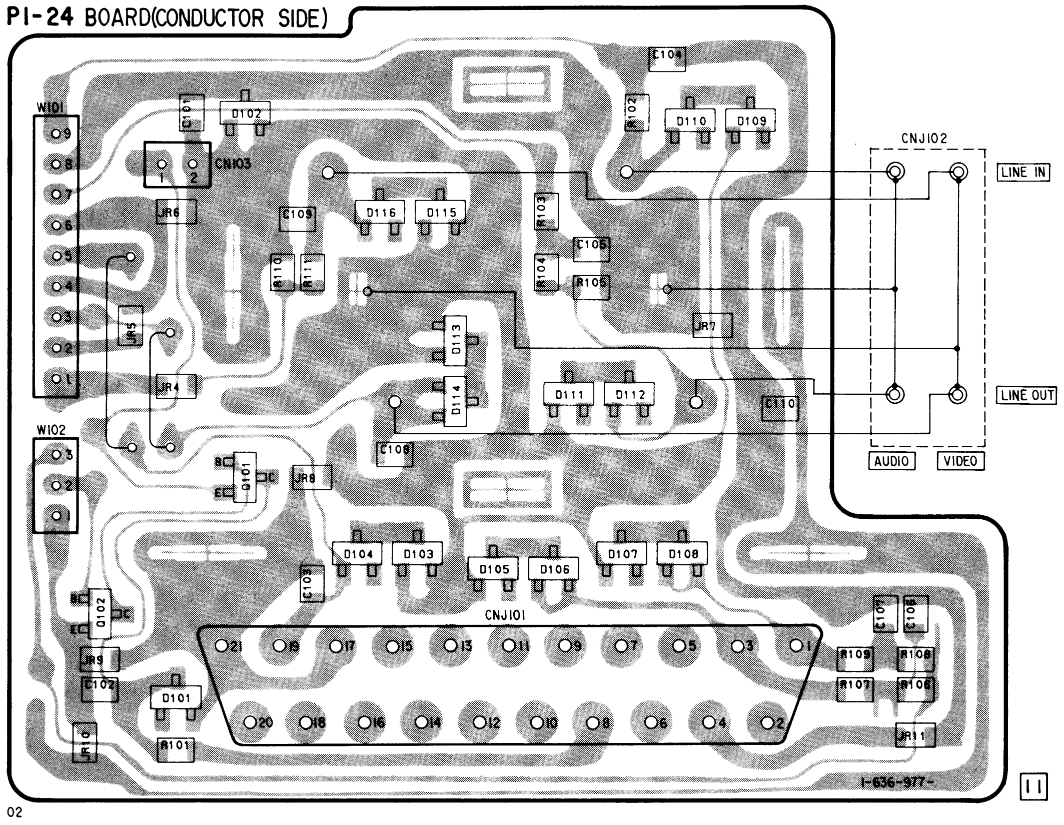
When indicating parts by reference number, please include the board name.

RM-44 (CONTROL S/L TERMINAL), PI-24 (INPUT/OUTPUT) PRINTED WIRING BOARDS

—Ref. No. RM-44, PI-24 BOARDS : 4,000 Series—



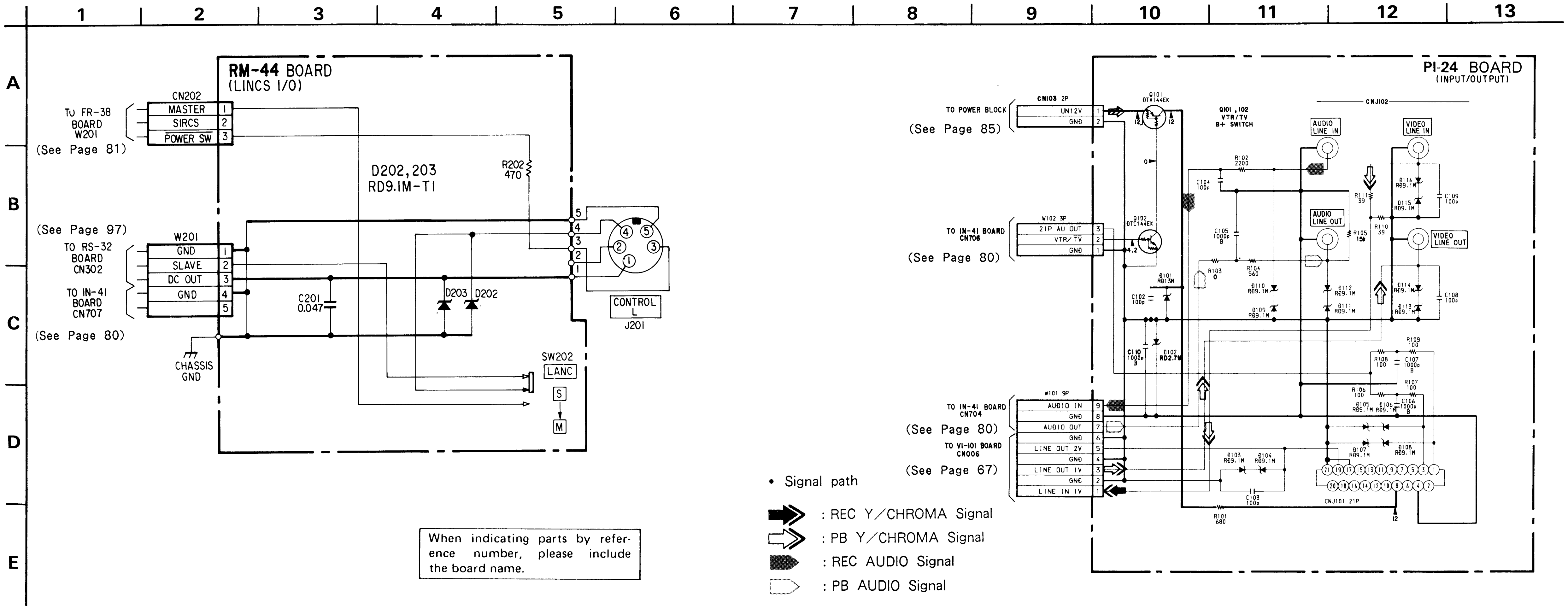
RM-44 BOARD(CONDUCTOR SIDE)
J201
CONTROL L
SW202
LANC
M S
W201
CN202
D202
D203
R202
JR1
JR2
JR3
C201
1-636-978-
11
02



PI-24 BOARD(CONDUCTOR SIDE)
W101
W102
CNJ102
LINE IN
LINE OUT
AUDIO
VIDEO
CNJ101
CN103
1-636-977-
11
02

RM-44 (CONTROL S/L TERMINAL), PI-24 (INPUT/OUTPUT) SCHEMATIC DIAGRAMS

—Ref. No. RM-44, PI-24 BOARDS : 4,000 Series—



RM-44 BOARD
(LINCS I/O)
TO FR-38 BOARD W201
(See Page 81)
CN202
MASTER
SIRCS
POWER SW
D202,203
RD9.1M-T1
R202 470
(See Page 97)
TO RS-32 BOARD CN302
TO IN-41 BOARD CN707
(See Page 80)
W201
GND
SLAVE
DC OUT
GND
C201 0.047
D203 D202
CHASSIS GND
CONTROL L
J201
SW202
LANC
S
M
PI-24 BOARD
(INPUT/OUTPUT)
TO POWER BLOCK
(See Page 85)
CN103 2P
UN12V
GND
TO IN-41 BOARD CN706
(See Page 80)
W102 3P
21P AU OUT
VTR/TV
GND
Q101, 102
VTR/TV
B+ SWITCH
TO IN-41 BOARD CN704
(See Page 80)
TO VI-101 BOARD CN006
(See Page 67)
W101 9P
AUDIO IN
GND
AUDIO OUT
GND
LINE OUT 2V
GND
LINE OUT 1V
GND
LINE IN 1V
CNJ102
AUDIO LINE IN
VIDEO LINE IN
AUDIO LINE OUT
VIDEO LINE OUT
CNJ101 21P

When indicating parts by reference number, please include the board name.

- Signal path

➡ : REC Y/CHROMA Signal

⇨ : PB Y/CHROMA Signal

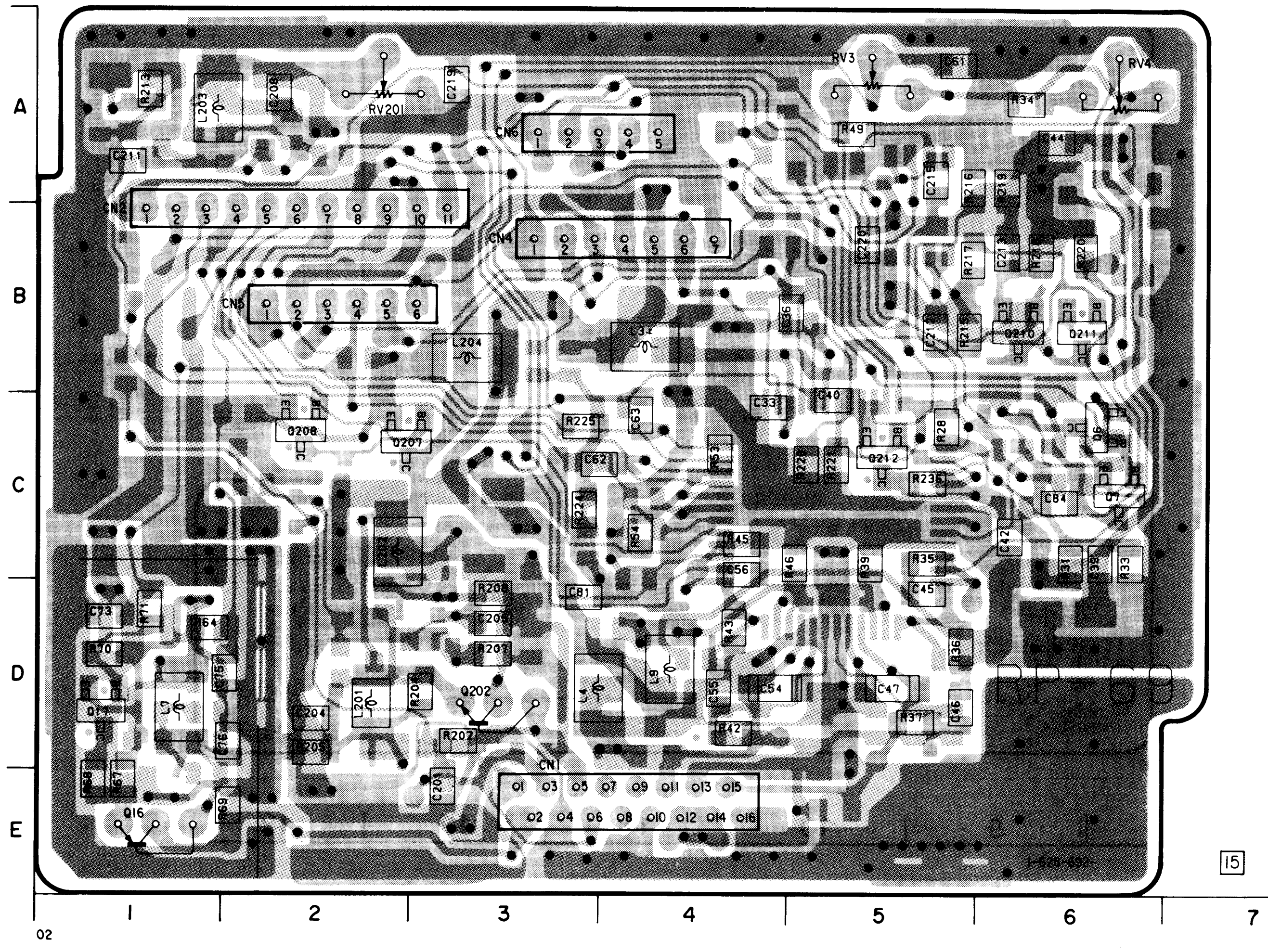
▶ : REC AUDIO Signal

▷ : PB AUDIO Signal

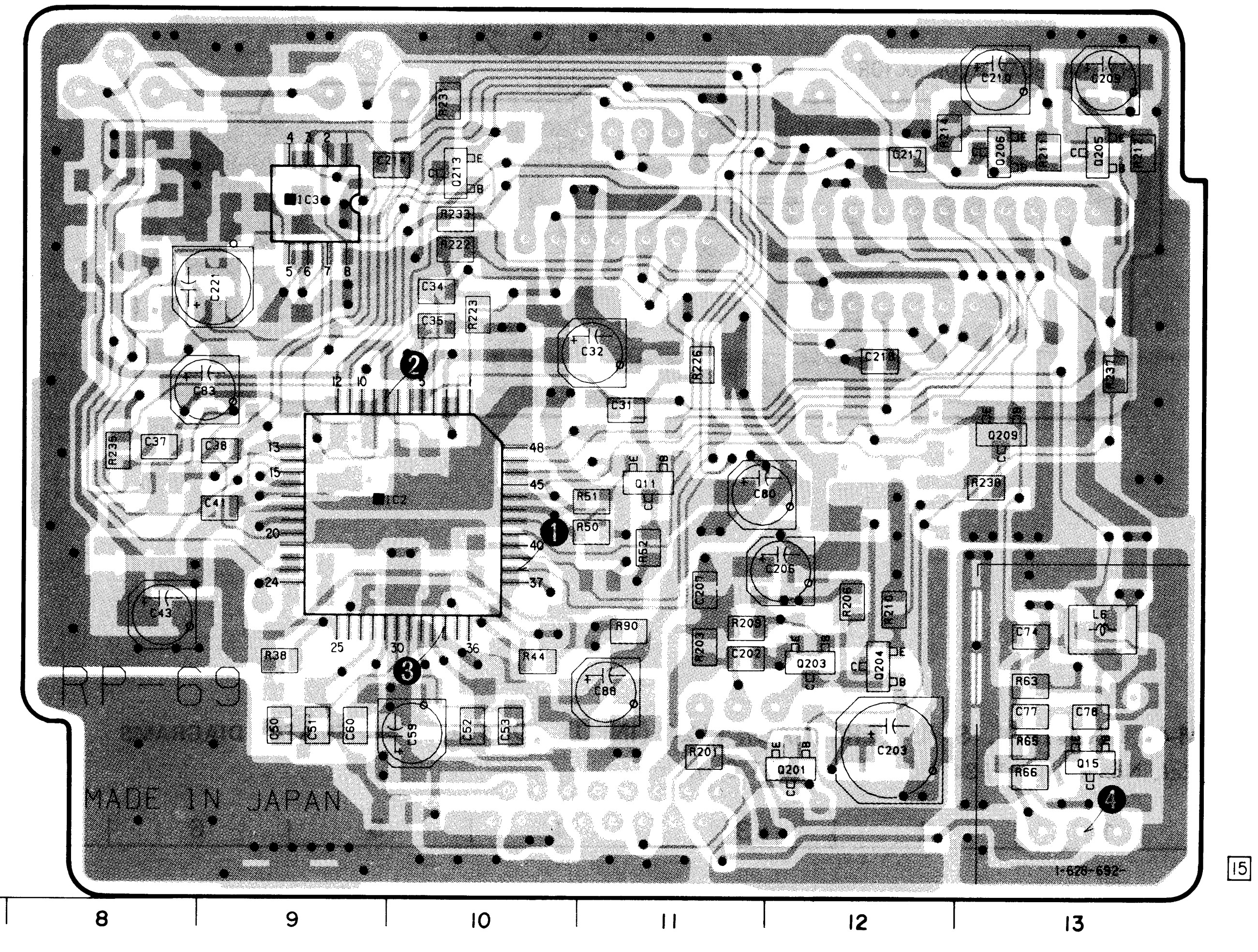
RP-69 (HEAD AMP/FLING ERASE) PRINTED WIRING BOARD

—Ref. No. RP-69 BOARD : 5,000 Series—

RP-69 BOARD (CONDUCTOR SIDE)


A
B
C
D
E
1
2
3
4
5
6
7
02
RV201
RV3
RV4
CN1
CN2
CN4
CN5
CN6
L203
L204
Q016
Q017
Q202
Q207
Q208
Q210
Q211
Q212
RP-69
15

RP-69 BOARD (COMPONENT SIDE)


8
9
10
11
12
13
IC2
IC3
Q011
Q015
Q201
Q203
Q204
Q205
Q206
Q209
Q213
C203
RP-69
MADE IN JAPAN
1-620-692-
15

For printed wiring boards :

- o— : indicates a lead wire mounted on the componet side.
- ● : Through hole..
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.
- Circled numbers refer to waveforms.

Note :

Conductor side : Parts on the conductor side being seen from the conductor are stated.

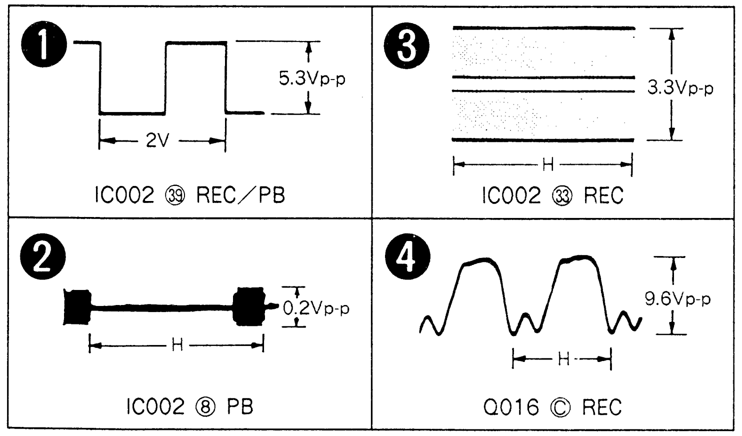
Component side : Parts on the component side being seen from the component are stated.

When indicating parts by reference number, please include the board name.

RP-69 Board

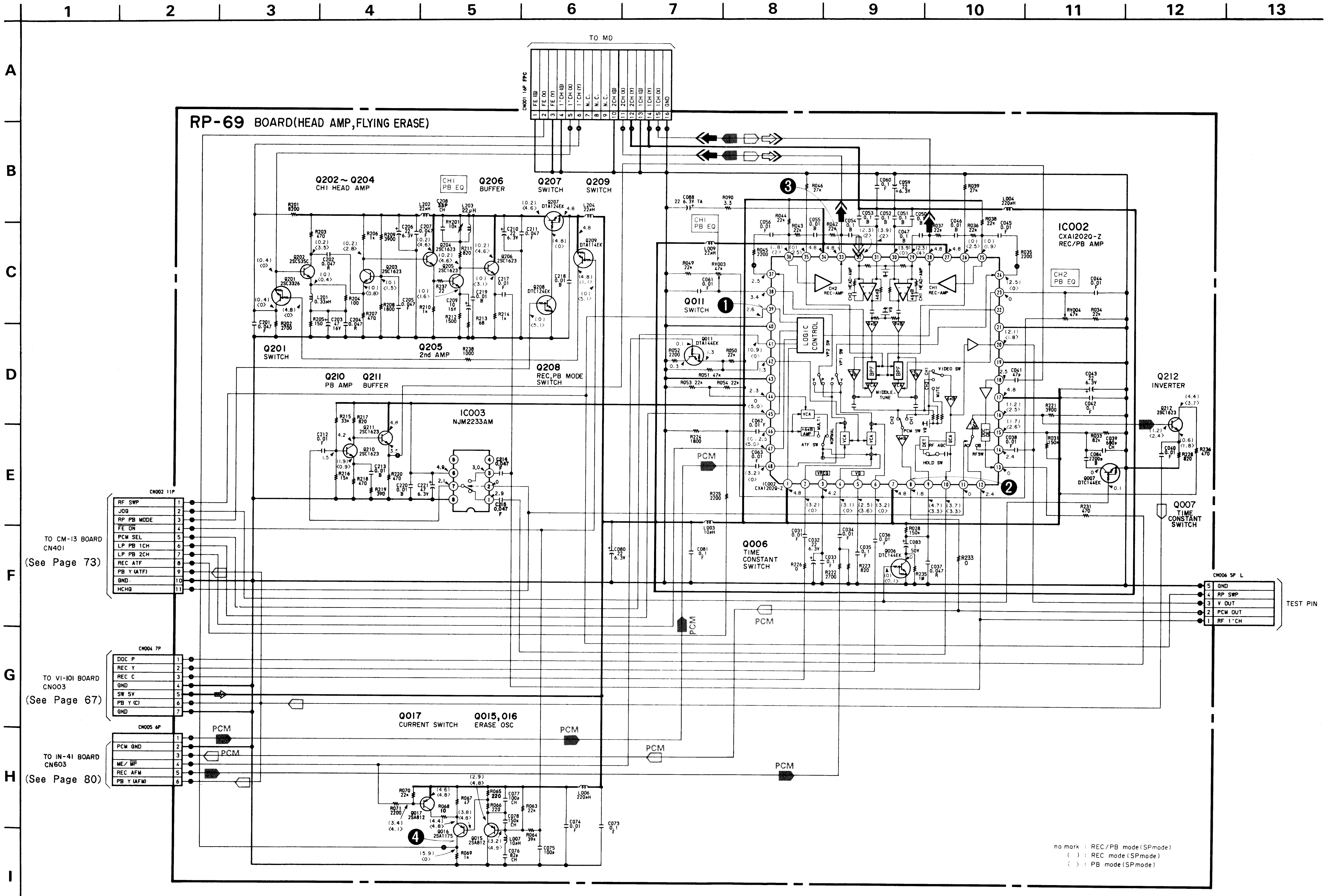
IC002	C-10
IC003	A-9
Q006	C-6
Q007	C-6
Q011	C-11
Q015	D-13
Q016	E-1
Q017	D-1
Q027	B-8
Q028	A-8
Q201	D-12
Q202	D-3
Q203	D-12
Q204	D-12
Q205	A-13
Q206	A-13
Q207	C-2
Q208	C-2
Q209	C-13
Q210	B-6
Q211	B-6
Q212	C-5
Q213	A-10

RP-69 BOARD


❶
5.3Vp-p
2V
IC002 ㊴ REC/PB
❸
3.3Vp-p
H
IC002 ㉝ REC
❷
0.2Vp-p
H
IC002 ⑧ PB
❹
9.6Vp-p
H
Q016 © REC

RP-69 (HEAD AMP/FLING ERASE) SCHEMATIC DIAGRAM

—Ref. No. RP-69 BOARD : 5,000 Series—


1
2
3
4
5
6
7
8
9
10
11
12
13
A
B
C
D
E
F
G
H
I
TO MD
CN001 16P FPC
RP-69 BOARD(HEAD AMP,FLYING ERASE)
Q202~Q204
CH1 HEAD AMP
CH1 PB EQ
Q206
BUFFER
Q207
SWITCH
Q209
SWITCH
Q201
SWITCH
Q205
2nd AMP
Q208
REC,PB MODE SWITCH
Q210
PB AMP
Q211
BUFFER
IC003
NJM2233AM
Q011
SWITCH
LOGIC CONTROL
IC002
CXA1202Q-Z
REC/PB AMP
CH2 PB EQ
Q212
INVERTER
Q007
TIME CONSTANT SWITCH
Q006
TIME CONSTANT SWITCH
CH2 REC-AMP
CH1 REC-AMP
VIDEO SW
MIDDLE-TUNE
PCM SW
HOLD SW
ATF SW
RF SW
PCM
CN002 11P
RF SWP
JOG
RP PB MODE
FE ON
PCM SEL
LP PB 1CH
LP PB 2CH
REC ATF
PB Y (ATF)
GND
HCHG
TO CM-13 BOARD
CN401
(See Page 73)
CN004 7P
DOC P
REC Y
REC C
GND
SW 5V
PB Y (C)
GND
TO VI-101 BOARD
CN003
(See Page 67)
CN005 6P
PCM GND
ME/MP
REC AFM
PB Y (AFM)
TO IN-41 BOARD
CN603
(See Page 80)
CN006 5P L
GND
RP SWP
V OUT
PCM OUT
RF 1'CH
TEST PIN
Q017
CURRENT SWITCH
Q015,016
ERASE OSC
❶
❷
❸
❹
no mark : REC/PB mode(SPmode)
( ) : REC mode(SPmode)
< > : PB mode(SPmode)

- Signal path

➡ : REC Y/CHROMA Signal

⇨ : PB Y/CHROMA Signal

▶ : REC AUDIO Signal

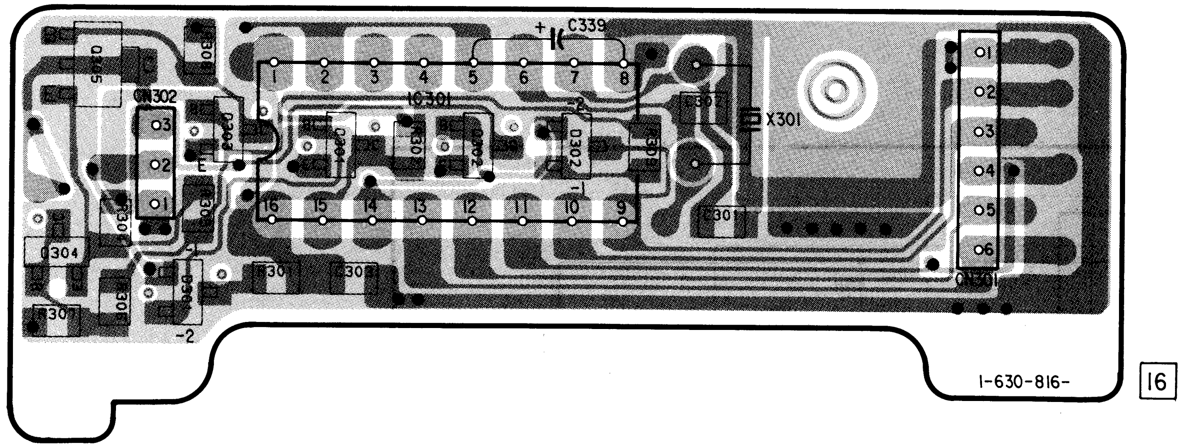
▷ : PB AUDIO Signal

When indicating parts by reference number, please include the board name.

RS-32 (LINCS CONTROL) PRINTED WIRING BOARD

—Ref. No. RS-32 BOARD : 5,000 Series—

RS-32 BOARD (CONDUCTOR SIDE)


C339
IC301
CN302
X301
CN301
1-630-816-
16
D302
D301
Q303
Q304
Q305
R304
R306
R307
R308
C302
C301
E
1
2
3
4
5
6
7
8
9
10
11
12
13
14
15
16
-2

02

For printed wiring boards :

- o— : indicates a lead wire mounted on the componet side.
- ● : Through hole.
- ▨ : Pattern from the side which enables seeing.
- ▨ : Pattern of the rear side.

When indicating parts by reference number, please include the board name.

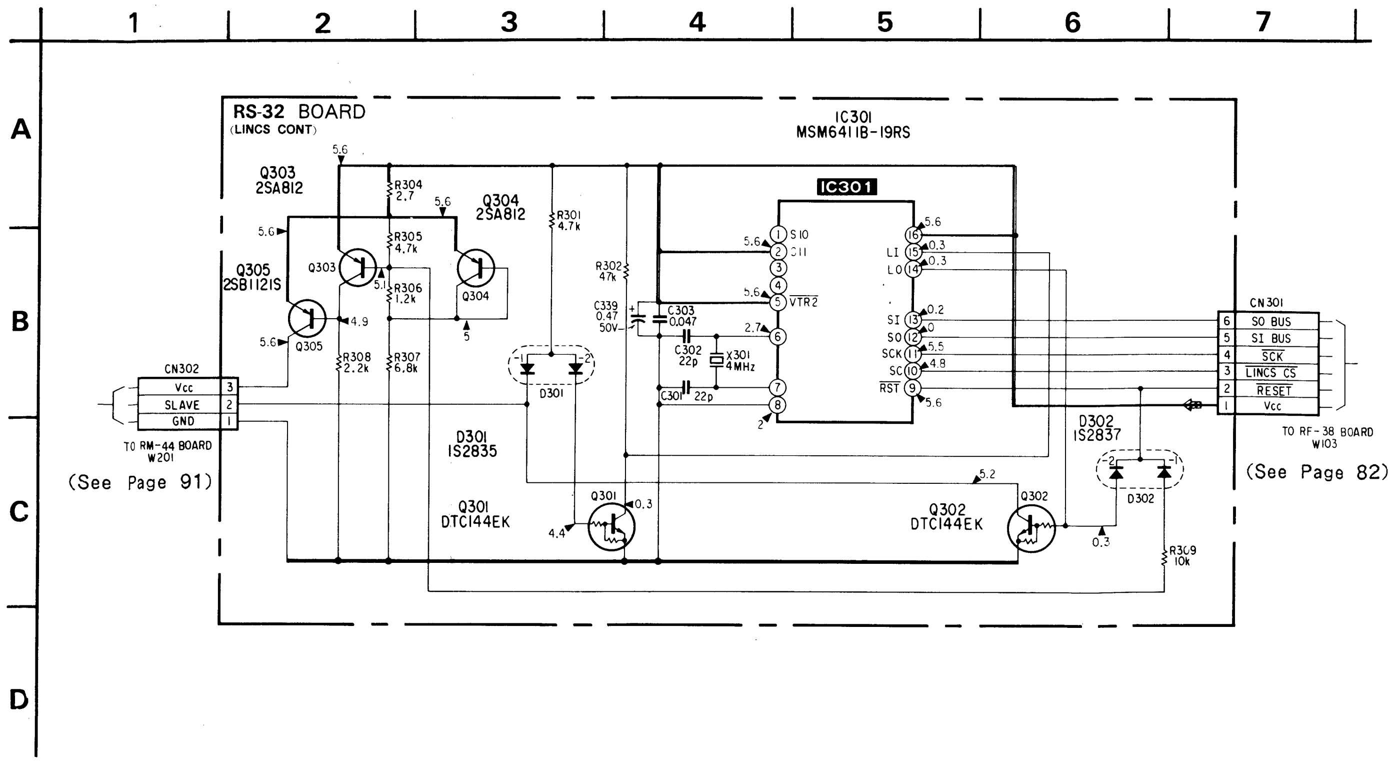
Note :

Conductor side : Parts on the conductor side being seen from the conductor are stated.

Component side : Parts on the component side being seen from the component are stated.

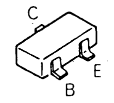
RS-32 (LINCS CONTROL) SCHEMATIC DIAGRAM

—Ref. No. RS-32 BOARD : 5,000 Series—

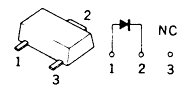

1
2
3
4
5
6
7
A
B
C
D
RS-32 BOARD
(LINCS CONT)
IC301
MSM6411B-19RS
IC301
Q303
2SA812
R304
2.7
Q304
2SA812
R301
4.7k
R305
4.7k
R306
1.2k
Q305
2SB1121S
R302
47k
C339
0.47
50V
C303
0.047
C302
22p
X301
4MHz
C301 22p
R308
2.2k
R307
6.8k
D301
D301
1S2835
Q301
DTC144EK
Q302
DTC144EK
D302
1S2837
D302
R349
10k
CN302
Vcc
SLAVE
GND
TO RM-44 BOARD
W201
(See Page 91)
CN301
SO BUS
SI BUS
SCK
LINCS CS
RESET
Vcc
TO RF-38 BOARD
W103
(See Page 82)
SI0
SI1
VTR2
LI
LO
SI
SO
SCK
SC
RST
5.6
4.9
5.1
0.3
0.2
4.4
5.2
2.7

5-3. SEMICONDUCTORS

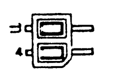
DTA144EK
DTA114EK
DTA124EK
DTA144EK
DTC124EK
DTC144EK
2SA1162
2SA1342
2SC1623
2SC2412K-QR
2SC3326N
2SC3395
2SC3396



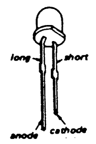
E10QS04



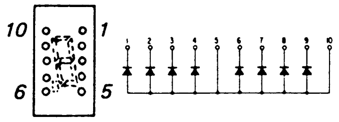
TLP907-0



GL3PR43

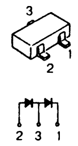

long
short
anode
cathode

TLSG126

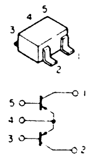


(Bottom View)

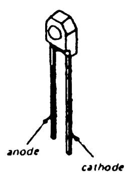
1SS226



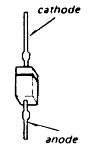
FMS1



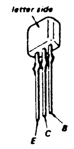
GL452S


anode
cathode

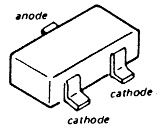
1SS283


cathode
anode

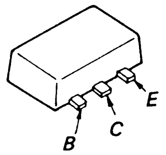
2SA1175-HFE
2SC2785-HFE


letter side
E C B

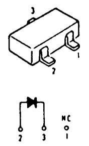
MA152WK
1S2836


anode
cathode
cathode

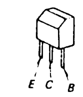
2SB1121



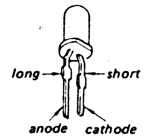
RD13M-B2
RD2.7M-B2
RD9.1M-B1
SB05-05CP
1SS193-TE85L



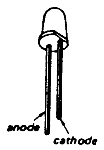
2SD774-34



SLP281C-50
TLY123


long
short
anode
cathode

AA3422S


anode
cathode

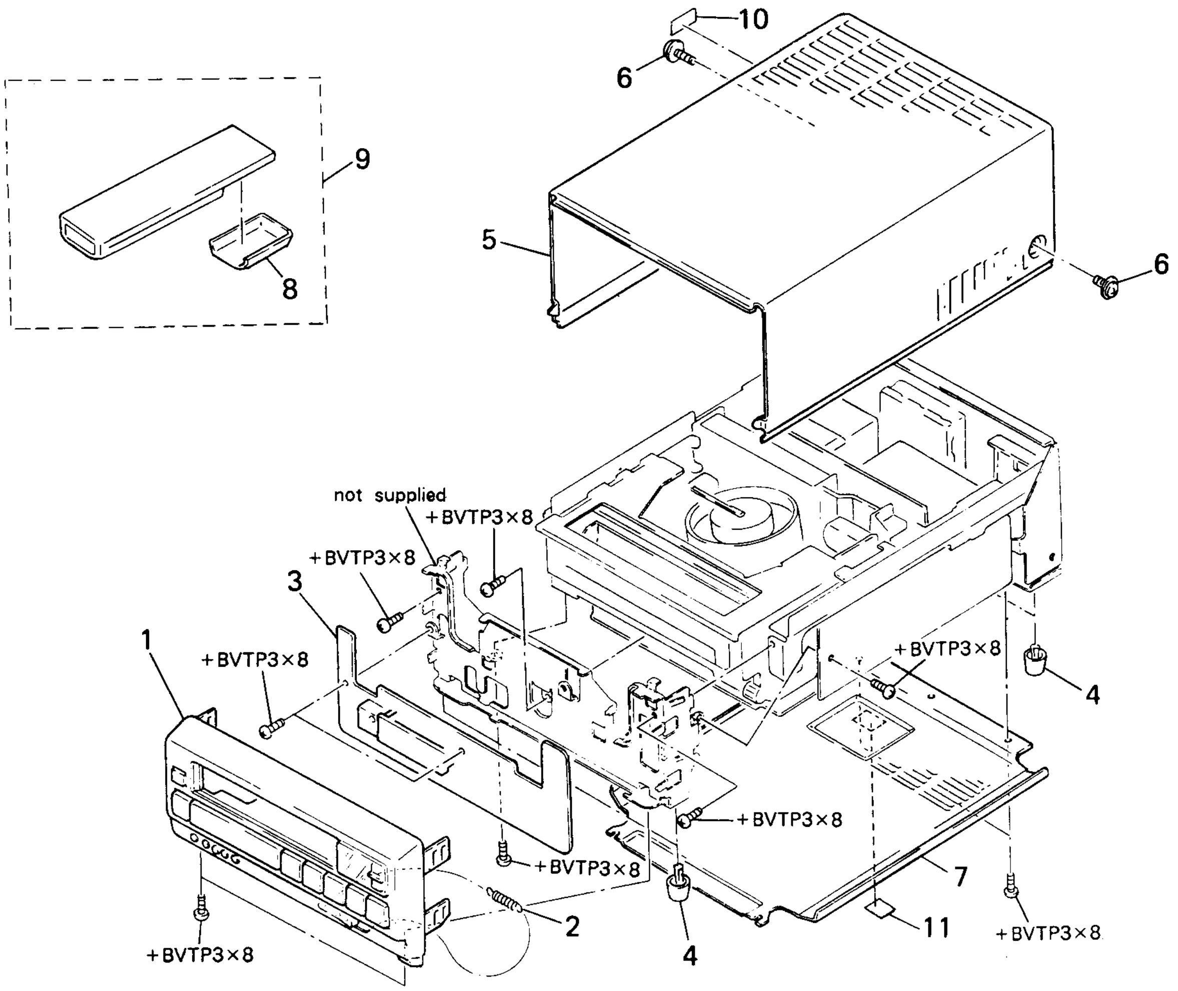
SECTION 6
EXPLODED VIEWS

NOTE :

- The mechanical parts with no reference number in the exploded views are not supplied.
- The construction parts of an assembled part are indicated with a collation number in the remark column.
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some differences from the original one.

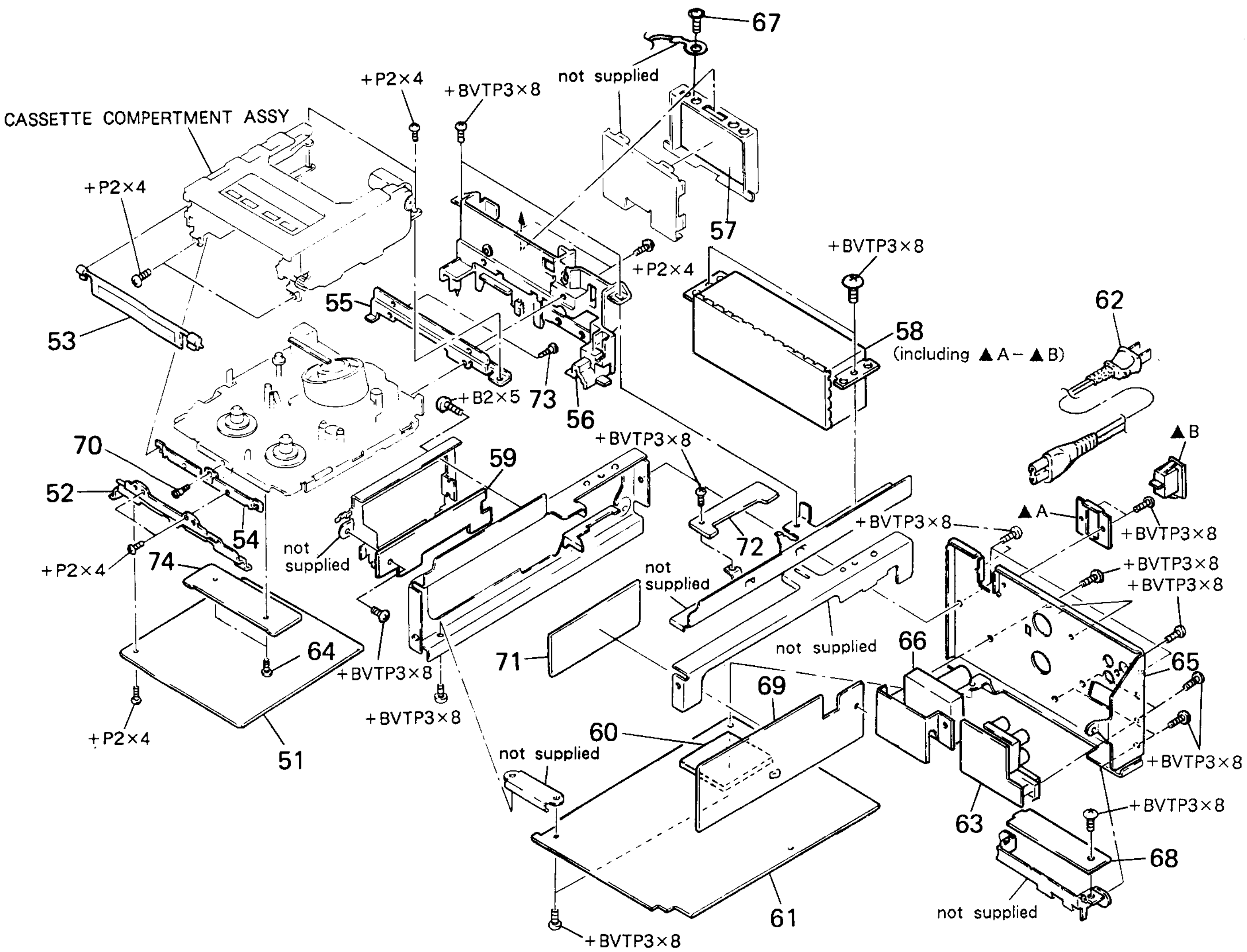
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

6-1. CABINET ASSEMBLY



No.	Part No.	Description	Remark
1	X-3940-089-1	PANEL ASSY (PAL), FRONT	
2	3-689-531-01	SPRING, TENSION	
3	*A-7062-469-A	FR-38 (P) BOARD, COMPLETE	
4	3-697-937-01	LEG (AEP, E MODEL)	
5	*X-3735-210-1	CASE ASSY, UPPER	
6	4-886-821-01	SCREW, M3 CASE	
7	*3-735-220-01	PLATE, BOTTOM	
8	2-181-754-01	LID BATTERY CASE	
9	1-465-590-11	REMOTE COMMANDER (RMT-463)	8
10	3-703-082-21	LABEL, CAUTION (UK MODEL)	
11	3-703-043-21	LABEL, CAUTION, MAIN (UK MODEL)	

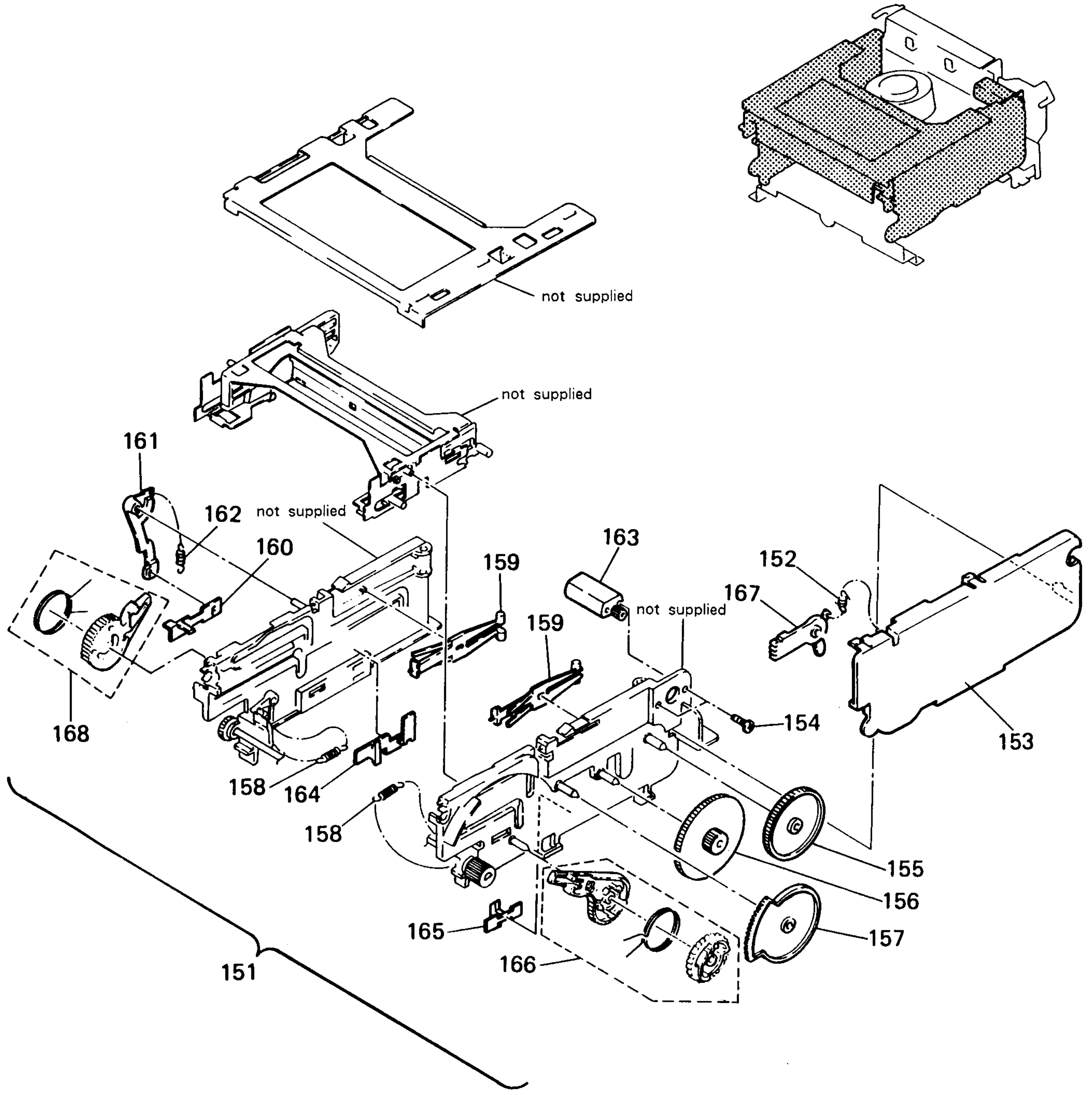
6-2. MAIN CHASSIS ASSEMBLY


67
not supplied
+P2×4
+BVTP3×8
CASSETTE COMPERTMENT ASSY
+P2×4
57
+P2×4
+BVTP3×8
62
55
53
58
(including ▲A – ▲B)
+B2×5
73
56
70
+BVTP3×8
59
▲B
52
54
not supplied
72
+BVTP3×8
▲A
+BVTP3×8
+P2×4
74
not supplied
+BVTP3×8
+BVTP3×8
64
not supplied
66
65
+BVTP3×8
71
69
+P2×4
+BVTP3×8
60
+BVTP3×8
51
not supplied
+BVTP3×8
63
68
61
not supplied
+BVTP3×8

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

No.	Part No.	Description	Remark
51	*A-7062-468-A	CM-13 (P) BOARD, COMPLETE	
52	*3-731-132-01	FRAME (FRONT), MD	
53	X-3731-119-1	DOOR ASSY, FRONT	
54	*3-732-810-02	BRACKET (FRONT)	
55	*3-732-811-01	BRACKET (REAR)	
56	*3-731-141-01	FRAME (REAR), MD	
57	*A-7062-467-A	RP-69 (P) BOARD, COMPLETE	
58	⚠ 1-413-588-11	POWER BLOCK (SW.REG)	
59	*A-7062-475-A	FC-43 (P) BOARD, COMPLETE	
60	*A-7062-465-A	CC-56 (P) BOARD, COMPLETE	
61	*A-7062-470-A	VI-101 (P) BOARD, COMPLETE	
62	⚠.1-558-032-11	CORD, POWER (UK MODEL)	
	⚠.1-575-132-11	CORD, POWER (AEP, E MODEL)	
63	*A-7062-471-A	PI-24 (P) BOARD, COMPLETE	
64	3-713-790-21	SCREW (M2X6), TAPPING, P3	
65	*X-3940-088-1	FRAME ASSY, REAR (AEP MODEL)	
	*X-3940-111-1	FRAME ASSY, REAR (UK, E MODEL)	
66	1-466-328-31	MODULATOR, RF (RFU-2027)	
	1-466-347-31	MODULATOR, RF (RFU-2028) (UK MODEL)	
67	3-703-502-01	SCREW	
68	*1-636-978-11	RM-44 BOARD	
69	*A-7062-473-A	IN-41 (P) BOARD, COMPLETE	
70	3-732-816-01	SCREW, STEP	
71	*A-7062-474-A	AF-20 (P) BOARD, COMPLETE	
72	*A-7061-590-A	RS-32 BOARD, COMPLETE	
73	3-732-817-01	SCREW (2X4.5), TAPPING	
74	*1-628-908-11	UC-3 BOARD	

6-3. CASSETTE COMPERTMENT ASSY


not supplied
not supplied
161
162
not supplied
160
163
159
152
167
not supplied
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154
153
168
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155
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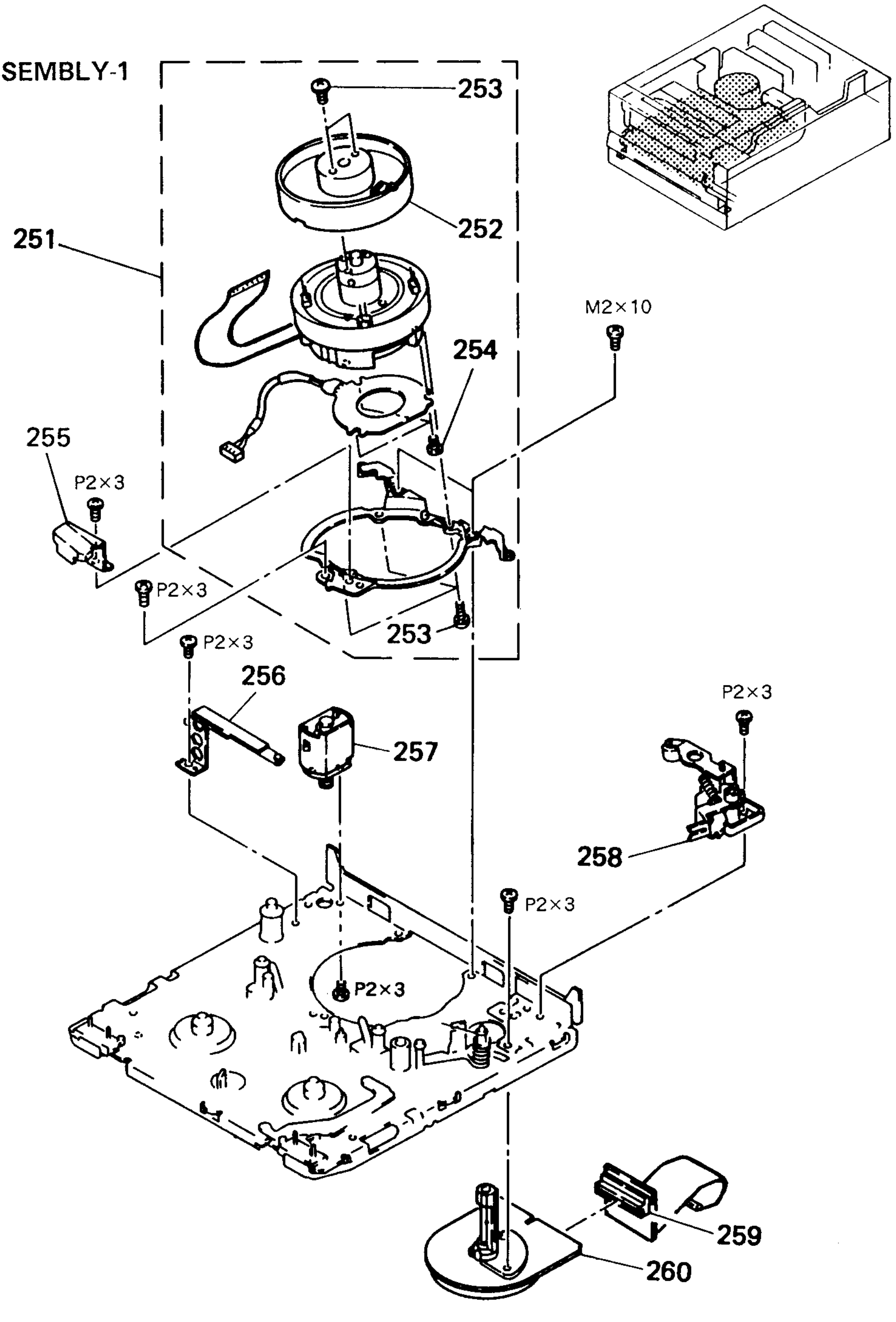
166
151

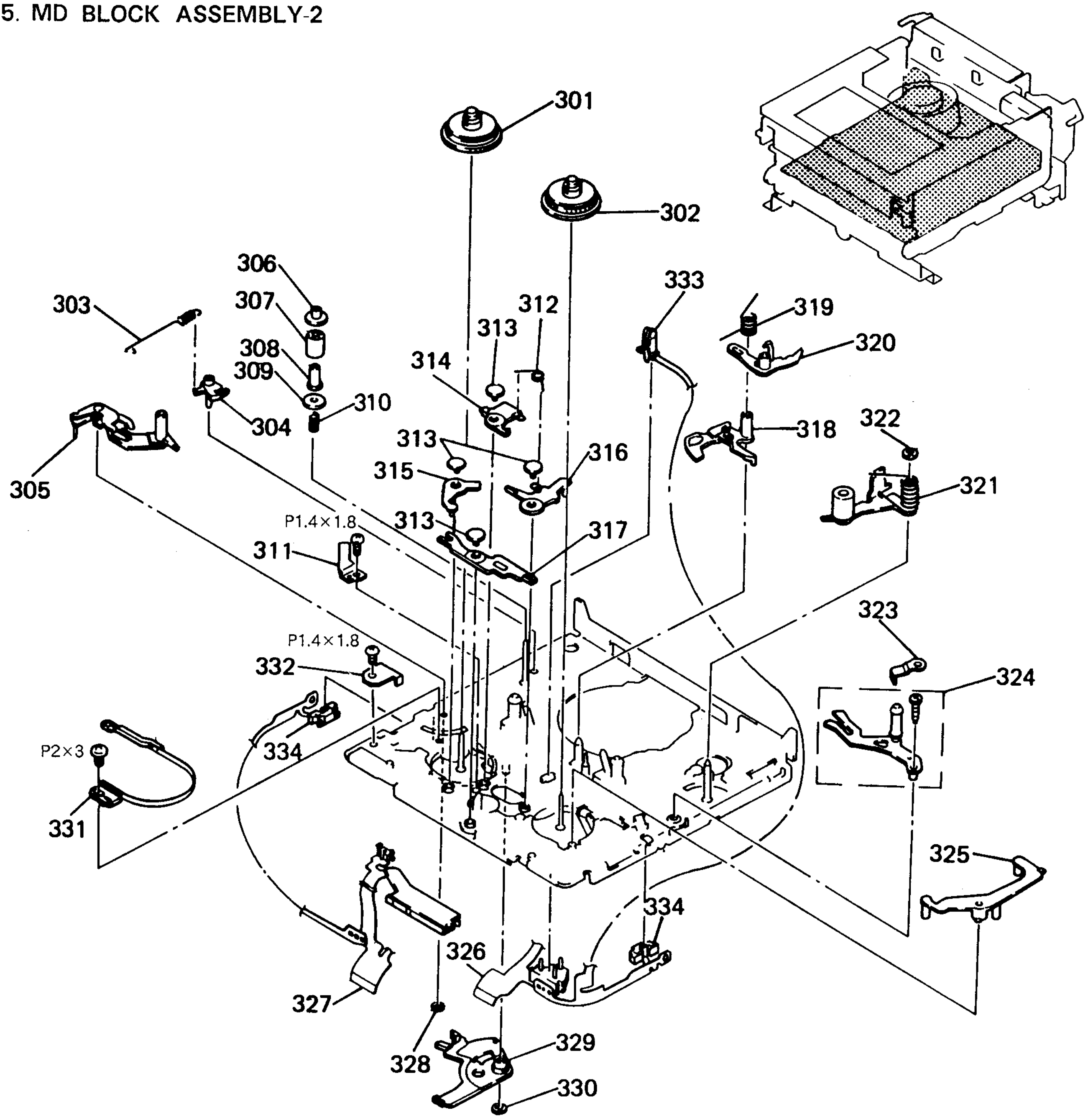
No.	Part No.	Description	Remark
151	A-7090-892-A	CASSETTE COMPARTMENT ASSY, FL	
152	3-731-175-02	SPRING, TENSION	
153	3-732-804-03	COVER, GEAR	
154	3-730-141-01	SCREW (PSW) (2X4)	
155	3-731-182-01	GEAR (B), DECELERATION	
156	3-731-181-01	GEAR (A), DECELERATION	
157	3-731-192-01	GEAR, MIDWAY	
158	3-731-176-02	SPRING, TENSION	
159	3-731-184-02	HOLDER LOCK	
160	3-731-189-01	SLIDER, LOCK	
161	3-731-188-01	ARM LOCK, DRIVING	
162	3-731-174-01	SPRING, TENSION	
163	X-3731-108-1	MOTOR ASSY, FL (THREADING) (M901)	
164	X-3726-867-1	PRISM (LEFT) ASSY	
165	X-3726-866-1	PRISM (RIGHT) ASSY	
166	X-3731-109-2	ARM (RIGHT) ASSY, DRIVING	
167	3-731-185-01	LINK, SWITCHING, DOOR	
168	X-3731-111-1	ARM (LEFT) ASSY, DRIVING	

6-4. MD BLOCK ASSEMBLY-1


253
252
251
M2×10
254
255
P2×3
P2×3
253
P2×3
256
257
P2×3
258
P2×3
P2×3
259
260

No.	Part No.	Description	Remark
251	A-7048-424-A	DRUM ASSY (DGU-72A-R)	252-254
252	A-7049-335-A	DRUM ASSY, ROTARY UPPER (DGR-72-R)	
253	3-730-141-01	SCREW (PSW) (2X4)	
254	3-895-823-01	SCREW (P1.4X2.5) TAPPING	
255	3-728-868-01	GUARD, GUIDE	
256	X-3728-864-1	GROUND ASSY, SHAFT	
257	A-7040-160-A	MOTOR ASSY, THREADING (LOADING) ((M903)	
258	A-7040-161-B	ROLLER BLOCK ASSY, HC	
259	*1-628-694-21	CC-23 BOARD	
260	8-835-331-01	MOTOR, DC U-22A (CAPSTAN MOTOR) (M902)	

6-5. MD BLOCK ASSEMBLY-2


301
302
303
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307
308
309
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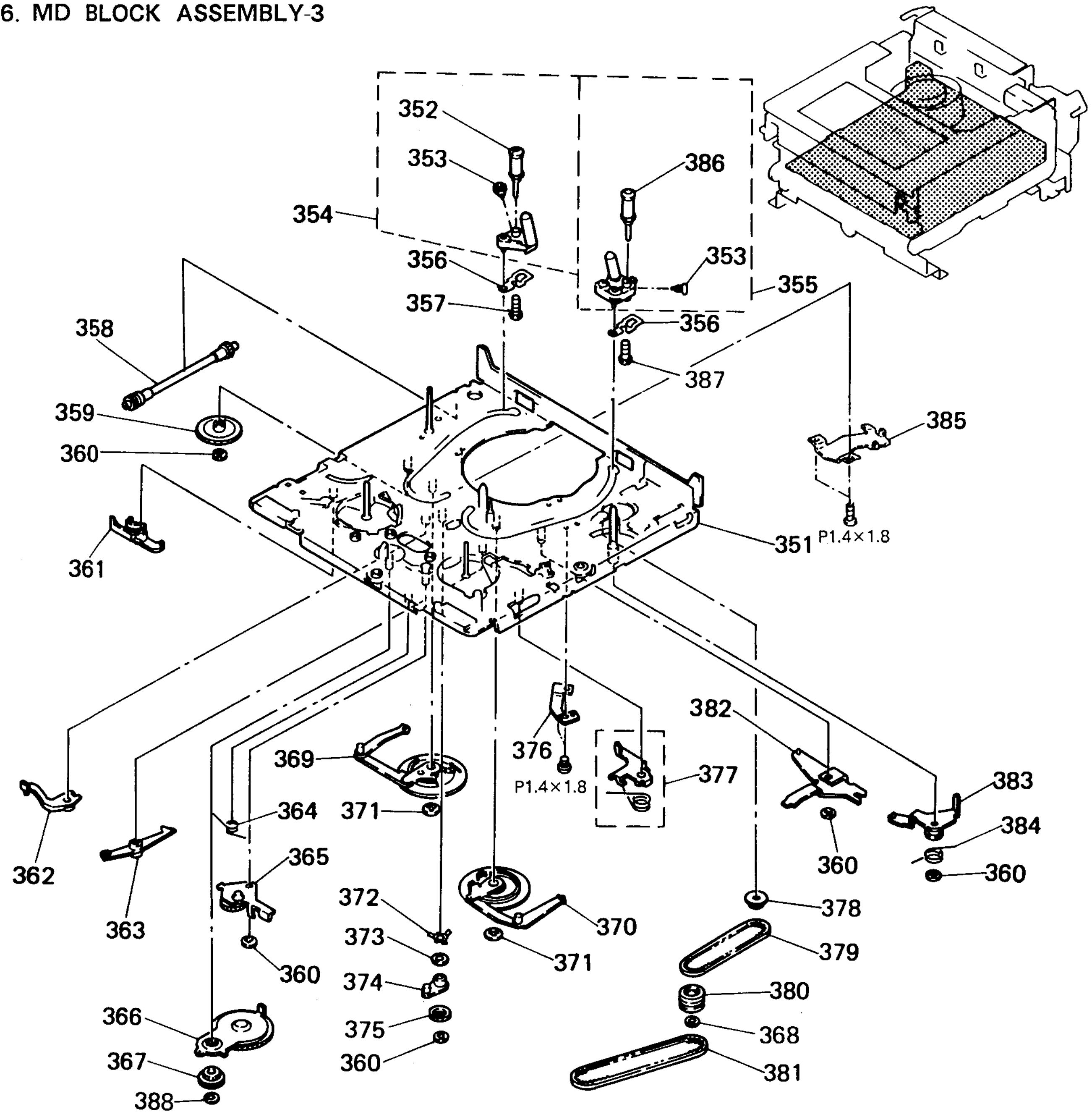
304
305
333
312
313
314
319
320
318
322
321
313
316
315
313
317
P1.4×1.8
311
P1.4×1.8
332
334
P2×3
331
323
324
325
334
326
327
328
329
330

No.	Part No.	Description	Remark
301	X-3728-851-1	TABLE ASSY, REEL, S	
302	X-3728-855-1	TABLE ASSY, REEL, T	
303	3-736-414-01	SPRING, TENSION	
304	3-728-855-03	ARM, ADJUSTMENT	
305	X-3728-867-1	ARM ASSY (S), TENSION REGULATOR	
306	3-726-884-01	FLANGE, UPPER, TG2	
307	3-726-883-01	ROLLER, TG2	
308	3-726-885-01	SLEEVE, TG2	
309	3-726-882-02	FLANGE, LOWER, TG2	
310	3-726-886-01	SPRING, COMPRESSION	
311	3-726-848-01	RETAINER, TL	
312	3-726-866-01	SPRING (ST), TORSION	
313	3-726-858-01	PIN, SHAFT RETAINER	
314	3-728-849-01	BRAKE, S	
315	3-726-852-01	BRAKE, LB	
316	3-728-850-01	BRAKE, T	
317	3-726-853-01	LEVER, LB	
318	3-728-875-01	STOPPER, RK	
319	3-726-864-01	SPRING (RK), TORSION	
320	3-728-852-02	ARM, RK STOPPER	
321	A-7040-219-A	ARM BLOCK ASSY, PINCH	
322	3-669-465-00	WASHER (1.5), STOPPER	
323	3-728-808-01	SPRING, LEAF	
324	X-3728-869-1	ARM ASSY, TG7	
325	3-728-848-01	ARM, LB RELEASE	
326	1-628-061-12	FP-90 FLEXIBLE BOARD	
327	1-628-060-12	FP-89 FLEXIBLE BOARD	
328	3-321-393-11	WASHER, STOPPER	
329	X-3726-806-2	LEVER ASSY, SW	
330	3-726-829-01	WASHER, STOPPER	
331	X-3728-859-1	BAND ASSY, TENSION REGULATOR	
332	3-730-125-01	RETAINER, SW	
333	3-728-837-01	HOLDER, LED	
334	3-728-869-02	HOLDER, SENSOR	

6-6. MD BLOCK ASSEMBLY-3


352
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386
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358
387
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385
360
P1.4×1.8
351
361
382
376
369
377
P1.4×1.8
383
364
371
362
384
365
360
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363
372
378
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379
360
374
371
380
366
375
368
367
360
381
388

No.	Part No.	Description	Remark
351	*X-3749-038-1	CHASSIS ASSY, MECHANICAL	
352	X-3726-820-1	ROLLER ASSY (U), GUIDE	
353	3-726-822-01	SCREW (M1.4X2) (STEP), HEAD	
354	A-7040-128-A	COASTER (LEFT) BLOCK ASSY	352, 353
355	A-7040-217-A	COASTER (RIGHT) BLOCK ASSY	(N1P)353,386
356	3-736-485-01	SPRING, LEAF, COSTER	
357	3-726-830-01	SCREW (M1.4X4) (THREE LOCK)	
358	X-3728-868-1	WORM ASSY	
359	3-744-109-01	GEAR, WHEEL	
360	3-726-829-01	WASHER, STOPPER	
361	3-728-842-01	LEVER, EJECT	
362	3-728-851-01	BRAKE, UL	
363	3-726-854-01	ARM, BRAKE RELEASE	
364	3-726-865-01	SPRING (LB), TORSION	
365	A-7040-130-A	GEAR BLOCK ASSY, LB	
366	X-3728-866-1	GEAR ASSY, RK	
367	X-3728-858-1	GEAR ASSY, RC	
368	3-533-073-01	WASHER	
369	X-3728-842-1	GEAR (LEFT) ASSY, DRIVE	
370	X-3728-843-1	GEAR (RIGHT) ASSY, DRIVE	
371	3-669-465-00	WASHER (1.5), STOPPER	
372	3-726-867-01	SPRING, LEAF	
373	3-701-436-21	WASHER, POLYEHTHYLENE	
374	3-726-857-02	ARM, UL	
375	3-726-856-02	GEAR, UL	
376	*3-726-805-01	REINFORCEMENT (TT)	
377	X-3726-808-2	BRAKE ASSY, TS	
378	X-3726-805-1	GEAR ASSY, JOINT	
379	3-728-866-11	BELT (S), TIMING	
380	X-3726-838-1	PULLEY (UPPER) ASSY, MIDWAY	
381	3-741-197-01	BELT (L), TIMING	
382	3-744-145-01	LEVER, THREADING	
383	X-3726-824-1	ARM ASSY, PINCH SUB	
384	3-726-895-01	SPRING	
385	X-3726-841-1	REINFORCEMENT (SS) ASSY	
386	X-3728-810-1	ROLLER ASSY (U)(PLATING), GUIDE	
387	3-736-473-01	SCREW (M2X0.25) (THREE LOCK)	
388	3-321-393-11	WASHER, STOPPER	

SECTION 7
ELECTRICAL PARTS LIST

FP-89 FP-90 POWER BLOCK RS-32 RP-69

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F: nonflammable
- Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- -XX, -X mean standardized parts, so they may have some difference frome the original one.
- SEMICONDUCTORS
  In each case, U: μ, for example:
  UA....: μA...., UPA....: μPA....,
  UPB....: μPB...., UPC....: μPC....,
  UPD....: μPD....
- CAPACITORS
  MF: μF, PF: μμF
- COILS
  MMH: mH, UH: μH

Ref.No	Part No.	Description	Remark
	1-628-060-12	FP-89 FLEXIBLE BOARD **********************	
	3-728-869-02	HOLDER, SENSOR	
		DIODE	
D301	8-719-820-44	PHOTO COUPLER TLP907-0 (SONY2)	
		TRANSISTOR	
Q301	8-729-906-48	TRANSISTOR EE-TP109	
		SWITCH	
S301	1-571-099-11	SWITCH	
S901	1-572-253-11	SWITCH, SLIDE (ENCODER)	

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Ref.No	Part No.	Description	Remark
	1-628-061-12	FP-90 FLEXIBLE BOARD **********************	
	3-728-837-01	HOLDER, LED	
	3-728-869-02	HOLDER, SENSOR	
		DIODE	
D302	8-719-940-81	DIODE GL452S	
D303	8-719-820-44	PHOTO COUPLER TLP907-0 (SONY2)	
		TRANSISTOR	
Q302	8-729-906-48	TRANSISTOR EE-TP109	
		SWITCH	
S302	1-572-298-11	SWITCH, PUSH (REC PROOF)	

****

Ref.No	Part No.	Description	Remark
	⚠.1-413-588-11	POWER BLOCK (SW. REG) **********************	

****

Ref.No	Part No.	Description	Remark
	*A-7061-590-A	RS-32 BOARD, COMPLETE (Ref.No 5,000 Series) **********************	
		CAPACITOR	
C301	1-163-101-00	CERAMIC CHIP 22PF 5% 50V	
C302	1-163-101-00	CERAMIC CHIP 22PF 5% 50V	
C303	1-163-035-00	CERAMIC CHIP 0.047MF 50V	
C339	1-126-159-11	ELECT 0.47MF 20% 50V	
		CONNECTOR	
CN301	1-506-485-11	PIN, CONNECTOR 6P	
CN302	1-506-482-11	PIN, CONNECTOR 3P	
		DIODE	
D301	8-719-104-34	DIODE 1S2836	
D302	8-719-400-18	DIODE MA152WK	
		IC	
IC301	8-759-920-94	IC MSM6411B-19RS	
		TRANSISTOR	
Q301	8-729-901-01	TRANSISTOR DTC144EK	
Q302	8-729-901-01	TRANSISTOR DTC144EK	
Q303	8-729-216-22	TRANSISTOR 2SA1162	
Q304	8-729-216-22	TRANSISTOR 2SA1162	
Q305	8-729-805-25	TRANSISTOR 2SB1121	
		RESISTOR	
R301	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R302	1-216-089-00	METAL GLAZE 47K 5% 1/10W	
R304	1-216-302-00	METAL GLAZE 2.7 5% 1/10W	
R305	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R306	1-216-051-00	METAL GLAZE 1.2K 5% 1/10W	
R307	1-216-069-00	METAL GLAZE 6.8K 5% 1/10W	
R308	1-216-057-00	METAL GLAZE 2.2K 5% 1/10W	
R309	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
		CRYSTAL	
X301	1-567-192-11	OSCILLATOR, CERAMIC (4MHz)	

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Ref.No	Part No.	Description	Remark
	*A-7062-467-A	RP-69 (P) BOARD, COMPLETE (Ref.No 5,000 Serise **************************	
		CAPACITOR	
C031	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C032	1-124-778-00	ELECT CHIP 22MF 20% 6.3V	
C033	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C034	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C035	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C036	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C037	1-163-809-11	CERAMIC CHIP 0.047MF 10% 25V	
C038	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C039	1-163-137-00	CERAMIC CHIP 680PF 5% 50V	
C040	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C041	1-163-109-00	CERAMIC CHIP 47PF 5% 50V	
C042	1-163-038-00	CERAMIC CHIP 0.1MF 25V	
C043	1-124-778-00	ELECT CHIP 22MF 20% 6.3V	
C044	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C045	1-164-232-11	CERAMIC CHIP 0.01MF 50V	
C046	1-164-232-11	CERAMIC CHIP 0.01MF 10% 50V	
C047	1-163-077-00	CERAMIC CHIP 0.1MF 10% 25V	
C050	1-164-633-11	CERAMIC CHIP 0.1MF 10% 25V	
C051	1-164-633-11	CERAMIC CHIP 0.1MF 10% 25V	
C052	1-164-633-11	CERAMIC CHIP 0.1MF 10% 25V	

RP-69

Ref.No	Part No.	Description			Remark
C053	1-164-633-11	CERAMIC CHIP	0.1MF	10%	25V
C054	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C055	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C056	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C059	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C060	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C061	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C062	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C063	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C073	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C074	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C075	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C076	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C077	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C078	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C080	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C081	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C083	1-126-193-11	ELECT CHIP	1MF	20%	50V
C084	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C088	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C201	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C202	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C203	1-126-204-11	ELECT CHIP	47MF	20%	16V
C204	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V
C205	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C206	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C207	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C208	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C209	1-124-779-00	ELECT CHIP	10MF	20%	16V
C210	1-124-778-00	ELECT CHIP	22MF	20%	6.3V
C211	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C212	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C213	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C214	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C215	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C217	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C218	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C219	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C220	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C221	1-126-205-11	ELECT CHIP	47MF	20%	6.3V

CONNECTOR

CN001	1-565-073-11	SOCKET, CONNECTOR 16P
CN002	1-506-476-11	PIN, CONNECTOR 11P
CN004	*1-564-006-21	PIN, CONNECTOR 7P
CN005	1-506-471-11	PIN, CONNECTOR 6P
CN006	1-506-484-11	PIN, CONNECTOR 5P

IC

IC002	8-750-032-35	IC CXA1202Q-Z
IC003	8-759-710-09	IC NJM2233AM

Ref.No	Part No.	Description			Remark

COIL

L003	1-408-777-00	INDUCTOR CHIP	10UH
L004	1-408-793-21	INDUCTOR CHIP	220UH
L006	1-408-793-21	INDUCTOR CHIP	220UH
L007	1-408-777-00	INDUCTOR CHIP	10UH
L009	1-408-781-00	INDUCTOR CHIP	22UH
L201	1-410-735-21	INDUCTOR CHIP	0.33UH
L202	1-408-781-00	INDUCTOR CHIP	22UH
L203	1-408-781-00	INDUCTOR CHIP	22UH
L204	1-408-781-00	INDUCTOR CHIP	22UH

TRANSISTOR

Q006	8-729-901-01	TRANSISTOR	DTC144EK
Q007	8-729-901-01	TRANSISTOR	DTC144EK
Q011	8-729-901-06	TRANSISTOR	DTA144EK
Q015	8-729-216-22	TRANSISTOR	2SA1162
Q016	8-729-119-76	TRANSISTOR	2SA1175TP-HFE
Q017	8-729-216-22	TRANSISTOR	2SA1162
Q201	8-729-202-38	TRANSISTOR	2SC3326N
Q202	8-729-353-53	TRANSISTOR	2SC535-C
Q203	8-729-100-66	TRANSISTOR	2SC1623
Q204	8-729-100-66	TRANSISTOR	2SC1623
Q205	8-729-100-66	TRANSISTOR	2SC1623
Q206	8-729-100-66	TRANSISTOR	2SC1623
Q207	8-729-901-05	TRANSISTOR	DTA124EK
Q208	8-729-901-00	TRANSISTOR	DTC124EK
Q209	8-729-901-04	TRANSISTOR	DTA114EK
Q210	8-729-100-66	TRANSISTOR	2SC1623
Q211	8-729-100-66	TRANSISTOR	2SC1623
Q212	8-729-100-66	TRANSISTOR	2SC1623

RESISTOR

R028	1-216-101-00	METAL GLAZE	150K	5%	1/10W
R031	1-216-101-00	METAL GLAZE	150K	5%	1/10W
R033	1-216-095-00	METAL GLAZE	82K	5%	1/10W
R034	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R035	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R036	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R037	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R038	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R039	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R042	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R043	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R044	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R045	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R046	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R049	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R050	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R051	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R052	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R053	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R054	1-216-081-00	METAL GLAZE	22K	5%	1/10W

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
R063	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R064	1-216-748-11	METAL GLAZE	39K	5%	1/10W	
R065	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R066	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R067	1-216-017-00	METAL GLAZE	47	5%	1/10W	
R068	1-216-001-00	METAL GLAZE	10	5%	1/10W	
R069	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R070	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R071	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R090	1-216-304-11	METAL GLAZE	3.3	5%	1/10W	
R201	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R202	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R203	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R204	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R205	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R206	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R207	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R208	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R209	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R210	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R211	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R212	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R213	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R214	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R215	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R216	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R217	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R218	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R219	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R220	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R221	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R222	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R223	1-216-049-00	METAL GLAZE	1K.	5%	1/10W	
R224	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R225	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R226	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R228	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R231	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R233	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R235	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R236	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R237	1-216-009-00	METAL GLAZE	22	5%	1/10W	
R238	1-216-049-00	METAL GLAZE	1K	5%	1/10W	

VARIABLE RESISTOR

RV003	1-230-498-11	RES, ADJ, CARBON 47K
RV004	1-230-498-11	RES, ADJ, CARBON 47K
RV201	1-230-496-11	RES, ADJ, CARBON 10K

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Ref.No	Part No.	Description	Remark
	*A-7062-468-A	CM-13 (P) BOARD, COMPLETE (Ref.No 2,000 Series) **************************	
	1-574-348-11	WIRE, FLAT TYPE 30P	

CAPACITOR

Ref.No	Part No.	Description				Remark
C201	1-126-163-11	ELECT	4.7MF	20%	25V	
C202	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C203	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C204	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C205	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C206	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C207	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C208	1-126-157-11	ELECT	10MF	20%	16V	
C209	1-126-301-11	ELECT	1MF	20%	50V	
C210	1-126-157-11	ELECT	10MF	20%	16V	
C211	1-126-162-11	ELECT	3.3MF	20%	50V	
C212	1-126-301-11	ELECT	1MF	20%	50V	
C213	1-126-301-11	ELECT	1MF	20%	50V	
C214	1-126-157-11	ELECT	10MF	20%	16V	
C215	1-126-157-11	ELECT	10MF	20%	16V	
C216	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C217	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C218	1-126-157-11	ELECT	10MF	20%	16V	
C219	1-126-301-11	ELECT	1MF	20%	50V	
C220	1-124-638-11	ELECT	22MF	20%	6.3V	
C221	1-127-539-11	ELECT(SOLID)	1MF	20%	25V	
C223	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V	
C224	1-135-180-21	TANTAL. CHIP	3.3MF	20%	6.3V	
C301	1-126-157-11	ELECT	10MF	20%	16V	
C302	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C303	1-126-157-11	ELECT	10MF	20%	16V	
C304	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C305	1-163-009-11	CERAMIC CHIP	0.001MF		50V	
C306	1-163-009-11	CERAMIC CHIP	0.001MF		50V	
C307	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C308	1-163-035-00	CERAMIC CHIP	0.047MF		50V	
C309	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C310	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V	
C311	1-164-182-11	CERAMIC CHIP	0.0033MF	10%	50V	
C312	1-163-129-00	CERAMIC CHIP	330PF	5%	50V	
C313	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C314	1-163-809-11	CERAMIC CHIP	0.047MF	10%	25V	
C315	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C316	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C317	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C318	1-163-105-00	CERAMIC CHIP	33PF	5%	50V	
C319	1-163-105-00	CERAMIC CHIP	33PF	5%	50V	
C320	1-163-005-11	CERAMIC CHIP	470PF	10%	50V	
C321	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V	
C322	1-163-111-00	CERAMIC CHIP	56PF	5%	50V	
C323	1-163-011-11	CERAMIC CHIP	0.0015MF	10%	50V	
C324	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	

When indicating parts by reference number, please include the board name.

CM-13

Ref.No	Part No.	Description			Remark
C325	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C326	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C327	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C328	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C329	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C330	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C331	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C332	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C333	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C334	1-126-301-11	ELECT	1MF	20%	50V
C337	1-124-257-00	ELECT	2.2MF	20%	50V
C338	1-136-017-00	CERAMIC CHIP	0.0047MF		50V
C339	1-136-017-00	CERAMIC CHIP	0.0047MF		50V
C401	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C402	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C403	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C404	1-126-154-11	ELECT	47MF	20%	6.3V
C405	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C406	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C409	1-126-154-11	ELECT	47MF	20%	6.3V
C410	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C411	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C412	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C413	1-126-154-11	ELECT	47MF	20%	6.3V
C414	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V
C501	1-130-495-00	MYLAR	0.1MF	5%	50V
C502	1-163-077-00	CERAMIC CHIP	0.1MF	10%	25V
C503	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C504	1-163-019-00	CERAMIC CHIP	0.0068MF	10%	50V
C505	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C506	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C507	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C508	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C509	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C510	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C511	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C512	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C513	1-127-491-00	ELECT(SOLID)	22MF	20%	10V
C514	1-124-589-11	ELECT	47MF	20%	16V
C515	1-127-499-00	ELECT(SOLID)	22MF	20%	16V
C516	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C517	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C518	1-127-491-00	ELECT(SOLID)	22MF	20%	10V
C520	1-163-038-00	CERAMIC CHIP	0.1MF		25V

CONNECTOR

Ref.No	Part No.	Description	Remark
CN201	*1-566-183-61	PIN, CONNECTOR (PC BOARD) 4P	
CN202	*1-566-183-21	PIN, CONNECTOR (PC BOARD) 4P	
CN203	1-574-346-11	CONNECTOR, FPC/FFC 15P	
CN204	1-506-482-11	PIN, CONNECTOR 3P	
CN401	1-506-490-21	PIN, CONNECTOR 11P	
CN403	*1-563-633-11	CONNECTOR, FLEXIBLE 30P	
CN405	1-574-347-11	CONNECTOR, FPC/FFC 18P	
CN406	*1-566-181-61	PIN, CONNECTOR (PC BOARD) 2P	
CN407	*1-566-181-21	PIN, CONNECTOR (PC BOARD) 2P	

DIODE

Ref.No	Part No.	Description	Remark
D301	8-719-400-18	DIODE 1SS193-TE85L	
D401	8-719-400-18	DIODE 1SS193-TE85L	
D405	8-719-104-34	DIODE 1S2836	
D406	8-719-104-34	DIODE 1S2836	
D407	8-719-104-34	DIODE 1S2836	
D408	8-719-104-34	DIODE 1S2836	
D409	8-719-200-36	DIODE E10QS04	
D410	8-719-200-36	DIODE E10QS04	
D501	8-719-938-75	DIODE SB05-05CP	
D502	8-719-938-75	DIODE SB05-05CP	
D503	8-719-104-34	DIODE 1S2836	

FERRITE BEAD

Ref.No	Part No.	Description	Remark
FB401	1-543-256-11	BEAD, FERRITE	
FB402	1-543-256-11	BEAD, FERRITE	

IC

Ref.No	Part No.	Description	Remark
IC201	8-759-107-68	IC CX20115A	
IC202	8-759-202-45	IC CX20114	
IC203	8-759-805-06	IC CXA1127M	
IC301	8-752-035-48	IC CXA1204Q	
IC302	8-759-013-24	IC LM358ML	
IC401	8-752-815-05	IC CXP80116-803Q	
IC403	8-759-804-72	IC LB1631M	
IC501	8-759-013-24	IC LM358ML	
IC502	8-759-945-17	IC MB3775PF	

COIL

Ref.No	Part No.	Description		Remark
L201	1-408-978-21	INDUCTOR	47UH	
L301	1-407-169-XX	INDUCTOR	100UH	
L302	1-408-987-21	INDUCTOR	330UH	
L401	1-408-978-21	INDUCTOR	47UH	
L501	1-424-104-11	COIL, CHOKE 10UH		
L502	1-424-106-11	COIL, CHOKE 47UH		
L503	1-424-106-11	COIL, CHOKE 47UH		

LEAD PIN

Ref.No	Part No.	Description	Remark
LP201	4-352-844-01	PIN, LEAD, COATING	

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q201	8-729-216-22	TRANSISTOR 2SA1162	
Q202	8-729-902-96	TRANSISTOR FMS1	
Q203	8-729-901-01	TRANSISTOR DTC144EK	
Q301	8-729-216-22	TRANSISTOR 2SA1162	
Q302	8-729-100-66	TRANSISTOR 2SC1623	
Q303	8-729-216-22	TRANSISTOR 2SA1162	
Q304	8-729-100-66	TRANSISTOR 2SC1623	
Q305	8-729-216-22	TRANSISTOR 2SA1162	

When indicating parts by reference number, please include the board name.

CM-13

Ref.No	Part No.	Description	Remark
Q306	8-729-100-66	TRANSISTOR 2SC1623	
Q307	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q308	8-729-901-01	TRANSISTOR DTC144EK	
Q309	8-729-901-01	TRANSISTOR DTC144EK	
Q403	8-729-901-06	TRANSISTOR DTA144EK	
Q404	8-729-901-06	TRANSISTOR DTA144EK	
Q407	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q408	8-729-901-01	TRANSISTOR DTC144EK	
Q501	8-729-901-01	TRANSISTOR DTC144EK	
Q502	8-729-100-66	TRANSISTOR 2SC1623	
Q503	8-729-805-25	TRANSISTOR 2SB1121	
Q504	8-729-100-66	TRANSISTOR 2SC1623	
Q505	8-729-805-25	TRANSISTOR 2SB1121	
Q506	8-729-901-01	TRANSISTOR DTC144EK	
Q507	8-729-901-06	TRANSISTOR DTA144EK	
Q508	8-729-901-01	TRANSISTOR DTC144EK	
Q509	8-729-920-74	TRANSISTOR 2SC2412K-QR	
Q510	8-729-920-74	TRANSISTOR 2SC2412K-QR	

RESISTOR

Ref.No	Part No.	Description				Remark
R101	1-216-296-00	METAL GLAZE	0	5%	1/8W	
R201	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R202	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R203	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R204	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R205	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R206	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R209	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R210	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R211	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R212	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R213	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R214	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R215	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R216	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R217	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R218	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R219	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R220	1-216-304-11	METAL GLAZE	3.3	5%	1/10W	
R221	1-216-304-11	METAL GLAZE	3.3	5%	1/10W	
R222	1-216-304-11	METAL GLAZE	3.3	5%	1/10W	
R223	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R224	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R301	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R302	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R303	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R304	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R305	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R306	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R307	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R309	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R310	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R312	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R313	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R314	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R315	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R316	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R317	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R318	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R319	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R320	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R321	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R322	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R323	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R325	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R326	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R327	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R328	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R329	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R330	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R331	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R332	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R333	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R334	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R335	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R336-A	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R336-B	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R337	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R338	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R339	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R341	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R342	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R343	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R401	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R402	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R403	1-216-172-00	METAL GLAZE	82	5%	1/8W	
R405	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R406	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R407	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R408	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R410	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R411	1-216-093-00	METAL GLAZE	68K	5%	1/10W	
R414	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R415	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R416	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R417	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R418	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R419	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R420	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R421	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R423	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R428	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R429	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R432	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R435	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R436	1-216-295-00	METAL GLAZE	0	5%	1/10W	

When indicating parts by reference number, please include the board name.

CM-13

Ref.No	Part No.	Description				Remark
R437	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R442	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R444	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R446	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R447	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R448	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R449	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R501	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R502	1-216-691-11	METAL CHIP	47K	0.50%	1/10W	
R503	1-216-101-00	METAL GLAZE	150K	5%	1/10W	
R504	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R505	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R506	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R507	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R508	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R510	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R511	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R512	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R513	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R514	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R515	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R516	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R517	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R518	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R519	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R520	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R521	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R522	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R523	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R524	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R525	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R527	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R531	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R532	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R533	1-216-295-00	METAL GLAZE	0	5%	1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV301	1-230-496-11	RES, ADJ, CARBON 10K	
RV401	1-230-499-11	RES, ADJ, CARBON 100K	
RV501	1-228-993-00	RES, ADJ, CARBON 4.7K	

CRYSTAL

Ref.No	Part No.	Description	Remark
X301	1-567-699-11	VIBRATOR, CRYSTAL (5.94755MHz)	
X401	1-577-116-21	VIBRATOR, CRYSTAL (16MHz)	

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FR-38

Ref.No	Part No.	Description	Remark
	*A-7062-469-A	FR-38 (P) BOARD, COMPLETE (Ref.No 6,000 **************************	Series)
	1-808-652-11	DISPLAY PANEL, LIQUID CRYSTAL	
	*3-674-390-00	HOLDER (B), LED	
	3-735-201-01	COVER, LED	
	*3-735-208-01	HOLDER, INDICATION TUBE	
	*3-940-593-01	HOLDER, LED	

CAPACITOR

Ref.No	Part No.	Description			Remark
C092	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C104	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C105	1-163-101-00	CERAMIC CHIP	22PF	5%	50V
C106	1-163-009-11	CERAMIC CHIP	0.001MF		50V
C107	1-131-352-00	ELECT(SOLID)	6.8MF	20%	6.3V
C108	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C110	1-163-009-11	CERAMIC CHIP	0.001MF		50V
C201	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C202	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C203	1-163-035-00	CERAMIC CHIP	0.047MF		50V

CONNECTOR

Ref.No	Part No.	Description	Remark
CN109	1-506-482-11	PIN, CONNECTOR 3P	

DIODE

Ref.No	Part No.	Description	Remark
D001	8-719-920-05	LED SLP281C-50 (PLAY)	
D002	8-719-820-51	LED TLSG126 (ON/STANDBY)	
D003	8-719-980-83	LED GL3PR43 (REC)	
D004	8-719-812-32	LED TLY123 (PAUSE/STILL)	
D102	8-719-918-96	LED AA3422S (EDIT)	
D103	8-719-812-32	LED TLY123 (SYNCHRO EDIT)	
D104	8-719-974-88	LED LT9322E (LCD BACK LIGHT)	
D105	8-719-400-18	DIODE MA152WK	
D180	8-719-400-18	DIODE MA152WK	
D202	8-719-104-34	DIODE 1S2836	
D203	8-719-400-18	DIODE MA152WK	

IC

Ref.No	Part No.	Description	Remark
IC101	8-752-816-26	IC CXP5078H-056Q	
IC102	8-741-100-47	IC SBX1610-09	
IC103	8-759-937-56	IC S-8054ALB-LM-S	
IC201	8-759-910-84	IC MB88201-170N	

JUMPER RESISTOR

Ref.No	Part No.	Description				Remark
JR201	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR202	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR203	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR301	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR302	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR303	1-216-296-00	METAL GLAZE	0	5%	1/8W	

COIL

Ref.No	Part No.	Description	Remark
L111	1-410-192-51	INDUCTOR CHIP 1UH	

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
Q101	8-729-901-01	TRANSISTOR DTC144EK	
Q102	8-729-901-01	TRANSISTOR DTC144EK	
Q180	8-729-901-06	TRANSISTOR DTA144EK	
Q201	8-729-901-01	TRANSISTOR DTC144EK	
Q202	8-729-901-01	TRANSISTOR DTC144EK	

RESISTOR

Ref.No	Part No.	Description				Remark
R001	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R002	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R008	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R009	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R011	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R017	1-216-084-00	METAL GLAZE	30K	5%	1/10W	
R018	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R019	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R021	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R028	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R029	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R033	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R036	1-216-076-00	METAL GLAZE	13K	5%	1/10W	
R038	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R039	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R043	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R046	1-216-076-00	METAL GLAZE	13K	5%	1/10W	
R048	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R049	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R051	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R059	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R081	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R082	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R083	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R084	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R091	1-216-175-00	METAL GLAZE	110	5%	1/8W	
R092	1-216-649-11	METAL CHIP	820	0.50%	1/10W	
R101	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R102	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R103	1-216-013-00	METAL GLAZE	33	5%	1/10W	
R104	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R105	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R106	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R108	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R110	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R118	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R122	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R151	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R152	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R154	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R155	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R180	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R201	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R202	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R205	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	

SWITCH

Ref.No	Part No.	Description	Remark
SW001	1-554-088-00	SWITCH, KEY BOARD (REC)	
SW002	1-554-174-00	SWITCH, KEY BOARD (PLAY)	
SW003	1-554-174-00	SWITCH, KEY BOARD (FF)	
SW011	1-554-174-00	SWITCH, KEY BOARD (STOP)	
SW012	1-554-174-00	SWITCH, KEY BOARD (REW)	
SW014	1-554-174-00	SWITCH, KEY BOARD (PAUSE/STILL)	
SW021	1-554-174-00	SWITCH, KEY BOARD (SP/LP)	
SW022	1-554-174-00	SWITCH, KEY BOARD (EDIT)	
SW031	1-554-174-00	SWITCH, KEY BOARD (GO TO ZERO)	
SW041	1-554-174-00	SWITCH, KEY BOARD (COUNTER RESET)	
SW043	1-554-174-00	SWITCH, KEY BOARD (SYNCHRO EDIT)	
SW051	1-554-174-00	SWITCH, KEY BOARD (SLOW/STILL ADJUST ▲)	
SW052	1-554-174-00	SWITCH, KEY BOARD (SLOW/STILL ADJUST ▼)	
SW101	1-554-174-00	SWITCH, KEY BOARD (EJECT)	
SW102	1-554-174-00	SWITCH, KEY BOARD (ON/STANDBY)	

CRYSTAL

Ref.No	Part No.	Description	Remark
X101	1-567-160-21	OSCILLATOR, CERAMIC (4.19MHz)	
X201	1-567-143-00	OSCILLATOR, CERAMIC (6MHz)	

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*A-7062-470-A VI-101 (P) BOARD, COMPLETE
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(Ref.No 1,000 Series)

Ref.No	Part No.	Description	Remark
	*3-731-164-01	CASE (MAIN), SHIELD, CCD	
	*3-731-165-01	LID, SHIELD CASE, CCD	

CAPACITOR

Ref.No	Part No.	Description				Remark
C001	1-126-157-11	ELECT	10MF	20%	16V	
C002	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V	
C003	1-126-157-11	ELECT	10MF	20%	16V	
C004	1-126-157-11	ELECT	10MF	20%	16V	
C005	1-126-157-11	ELECT	10MF	20%	16V	
C006	1-126-157-11	ELECT	10MF	20%	16V	
C007	1-163-141-00	CERAMIC CHIP	0.001MF	5%	50V	
C008	1-126-157-11	ELECT	10MF	20%	16V	
C009	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C010	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C011	1-126-157-11	ELECT	10MF	20%	16V	
C012	1-126-157-11	ELECT	10MF	20%	16V	
C013	1-163-127-00	CERAMIC CHIP	270PF	5%	50V	
C014	1-163-117-00	CERAMIC CHIP	100PF	5%	50V	
C015	1-124-638-11	ELECT	22MF	20%	6.3V	
C016	1-163-101-00	CERAMIC CHIP	22PF	5%	50V	
C017	1-126-157-11	ELECT	10MF	20%	16V	
C018	1-124-968-11	ELECT	22MF	20%	6.3V	
C019	1-126-157-11	ELECT	10MF	20%	16V	
C020	1-163-033-00	CERAMIC CHIP	0.022MF		50V	
C021	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C022	1-163-131-00	CERAMIC CHIP	390PF	5%	50V	
C024	1-163-038-00	CERAMIC CHIP	0.1MF		25V	

When indicating parts by reference number, please include the board name.

VI-101

Ref.No	Part No.	Description			Remark
C025	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C026	1-163-099-00	CERAMIC CHIP	18PF	5%	50V
C027	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C031	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C033	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C034	1-126-157-11	ELECT	10MF	20%	16V
C035	1-126-157-11	ELECT	10MF	20%	16V
C037	1-126-157-11	ELECT	10MF	20%	16V
C039	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C040	1-163-091-00	CERAMIC CHIP	8PF	0.25PF	50V
C041	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
C042	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C043	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C045	1-124-465-00	ELECT	0.47MF	20%	50V
C046	1-126-157-11	ELECT	10MF	20%	16V
C047	1-124-465-00	ELECT	0.47MF	20%	50V
C048	1-163-121-00	CERAMIC CHIP	150PF	5%	50V
C049	1-126-301-11	ELECT	1MF	20%	50V
C050	1-126-301-11	ELECT	1MF	20%	50V
C051	1-126-157-11	ELECT	10MF	20%	16V
C052	1-126-157-11	ELECT	10MF	20%	16V
C053	1-126-157-11	ELECT	10MF	20%	16V
C054	1-126-157-11	ELECT	10MF	20%	16V
C055	1-126-157-11	ELECT	10MF	20%	16V
C056	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C057	1-163-125-00	CERAMIC CHIP	220PF	5%	50V
C060	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C061	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C101	1-126-160-11	ELECT	1MF	20%	50V
C102	1-124-463-00	ELECT	0.1MF	20%	50V
C103	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C104	1-124-239-00	ELECT	6.8MF	20%	10V
C105	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C106	1-126-160-11	ELECT	1MF	20%	50V
C107	1-124-239-00	ELECT	6.8MF	20%	10V
C109	1-126-160-11	ELECT	1MF	20%	50V
C110	1-126-160-11	ELECT	1MF	20%	50V
C111	1-126-160-11	ELECT	1MF	20%	50V
C112	1-124-239-00	ELECT	6.8MF	20%	10V
C113	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C114	1-126-160-11	ELECT	1MF	20%	50V
C115	1-126-160-11	ELECT	1MF	20%	50V
C116	1-126-160-11	ELECT	1MF	20%	50V
C117	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C200	1-126-157-11	ELECT	10MF	20%	16V
C201	1-126-157-11	ELECT	10MF	20%	16V
C202	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C204	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C205	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C206	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C207	1-164-182-11	CERAMIC CHIP	0.0033MF	10%	50V
C209	1-163-107-00	CERAMIC CHIP	39PF	5%	50V
C210	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C211	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C212	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C213	1-163-116-00	CERAMIC CHIP	91PF	5%	50V
C214	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C253	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C254	1-163-119-00	CERAMIC CHIP	120PF	5%	50V
C255	1-163-127-00	CERAMIC CHIP	270PF	5%	50V
C256	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C257	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C258	1-164-232-11	CERAMIC CHIP	0.01MF	10%	50V
C259	1-163-095-00	CERAMIC CHIP	12PF	5%	50V
C260	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C262	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C263	1-163-111-00	CERAMIC CHIP	56PF	5%	50V
C264	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C267	1-163-109-00	CERAMIC CHIP	47PF	5%	50V
C268	1-163-133-00	CERAMIC CHIP	470PF	5%	50V
C270	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C271	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V
C274	1-126-157-11	ELECT	10MF	20%	16V
C275	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C276	1-163-088-00	CERAMIC CHIP	5PF	0.25PF	50V
C277	1-163-105-00	CERAMIC CHIP	33PF	5%	50V
C300	1-163-097-00	CERAMIC CHIP	15PF	5%	50V
C315	1-163-123-00	CERAMIC CHIP	180PF	5%	50V
C316	1-124-589-11	ELECT	47MF	20%	16V
C317	1-124-589-11	ELECT	47MF	20%	16V
C320	1-163-115-00	CERAMIC CHIP	82PF	5%	50V
C321	1-163-035-00	CERAMIC CHIP	0.047MF		50V
C402	1-163-093-00	CERAMIC CHIP	10PF	5%	50V
C403	1-163-117-00	CERAMIC CHIP	100PF	5%	50V
C404	1-126-301-11	ELECT	1MF	20%	50V
C405	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C406	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C407	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C408	1-126-163-11	ELECT	4.7MF	20%	35V
C409	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C410	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C411	1-126-157-11	ELECT	10MF	20%	16V
C412	1-163-118-00	CERAMIC CHIP	110PF	5%	50V
C413	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C414	1-126-163-11	ELECT	4.7MF	20%	35V
C415	1-163-009-11	CERAMIC CHIP	0.001MF	10%	50V
C416	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C500	1-126-157-11	ELECT	10MF	20%	16V
C501	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C502	1-124-465-00	ELECT	0.47MF	20%	50V
C503	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C504	1-126-157-11	ELECT	10MF	20%	16V
C507	1-126-157-11	ELECT	10MF	20%	16V
C508	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C509	1-124-254-00	ELECT	0.68MF	20%	50V
C510	1-124-257-00	ELECT	2.2MF	20%	50V

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
C511	1-126-157-11	ELECT	10MF	20%	16V
C512	1-126-176-11	ELECT	220MF	20%	6.3V
C513	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C514	1-126-157-11	ELECT	10MF	20%	16V
C515	1-124-589-11	ELECT	47MF	20%	10V
C516	1-124-471-00	ELECT	1000MF	20%	6.3V
C625	1-127-515-11	ELECT(SOLID)	47MF	20%	6.3V

CONNECTOR

Ref.No	Part No.	Description
CN001	1-568-074-11	CONNECTOR (RECEPTALE) 10P
CN002	1-568-078-11	CONNECTOR (RECEPTALE) 18P
CN003	1-506-472-11	PIN, CONNECTOR 7P
CN006	1-506-471-11	PIN, CONNECTOR 6P
CN007	1-506-470-11	PIN, CONNECTOR 5P
CN101	*1-564-317-11	PIN, BOARD TO BOARD 5P
CN102	*1-564-317-11	PIN, BOARD TO BOARD 5P

DIODE

Ref.No	Part No.	Description
D001	8-719-800-76	DIODE 1SS226
D002	8-719-400-18	DIODE MA152WK
D250	8-719-800-76	DIODE 1SS226
D400	8-719-400-18	DIODE MA152WK
D401	8-719-400-18	DIODE MA152WK
D500	8-719-400-18	DIODE MA152WK
D501	8-719-400-18	DIODE MA152WK

FILTER

Ref.No	Part No.	Description
FL001	1-409-480-11	FILTER, TRAP
FL002	1-236-948-11	FILTER, LOW PASS
FL003	1-577-162-11	FILTER, CERAMIC
FL101	1-236-058-21	ENCAPSULATED COMPONENT
FL102	1-236-058-21	ENCAPSULATED COMPONENT
FL103	1-236-058-21	ENCAPSULATED COMPONENT
FL104	1-236-058-21	ENCAPSULATED COMPONENT
FL105	1-236-058-21	ENCAPSULATED COMPONENT
FL106	1-236-058-21	ENCAPSULATED COMPONENT
FL107	1-236-058-21	ENCAPSULATED COMPONENT
FL108	1-236-058-21	ENCAPSULATED COMPONENT
FL109	1-236-058-21	ENCAPSULATED COMPONENT

IC

Ref.No	Part No.	Description
IC001	8-752-034-40	IC CXA1200BQ
IC100	8-752-324-87	IC CXL1502M
IC400	8-752-033-86	IC CXA1203M
IC500	8-752-033-40	IC CXA1201Q

JUMPER RESISTOR

Ref.No	Part No.	Description			Remark
JR001	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR002	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR003	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR004	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR005	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR006	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR007	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR008	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR009	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR010	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR011	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR012	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR013	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR014	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR015	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR016	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR017	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR018	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR019	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR020	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR021	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR022	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR023	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR024	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR025	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR026	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR027	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR028	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR029	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR030	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR031	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR032	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR033	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR034	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR035	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR036	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR037	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR038	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR039	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR040	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR041	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR042	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR043	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR044	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR045	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR046	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR047	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR048	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR049	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR050	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR051	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR052	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR053	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR054	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR055	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR056	1-216-295-00	METAL GLAZE	0	5%	1/10W
JR057	1-216-296-00	METAL GLAZE	0	5%	1/8W
JR058	1-216-296-00	METAL GLAZE	0	5%	1/8W

When indicating parts by reference number, please include the board name.

VI-101

Ref.No	Part No.	Description				Remark
JR059	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR060	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR061	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR062	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR063	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR064	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR065	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR066	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR067	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR068	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR069	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR070	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR071	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR072	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR073	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR074	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR075	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR076	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR077	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR078	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR079	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR080	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR081	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR082	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR083	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR084	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR085	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR086	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR087	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR088	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR089	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR090	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR091	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR092	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR094	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR095	1-216-296-00	METAL GLAZE	0	5%	1/8W	
JR096	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR097	1-216-295-00	METAL GLAZE	0	5%	1/10W	
JR098	1-216-295-00	METAL GLAZE	0	5%	1/10W	

COIL

Ref.No	Part No.	Description		Remark
L001	1-408-970-21	INDUCTOR	10UH	
L002	1-408-975-21	INDUCTOR	27UH	
L003	1-408-978-21	INDUCTOR	47UH	
L004	1-408-974-21	INDUCTOR	22UH	
L006	1-408-975-21	INDUCTOR	27UH	
L007	1-408-976-21	INDUCTOR	33UH	
L100	1-410-393-11	INDUCTOR CHIP	100UH	
L101	1-410-393-11	INDUCTOR CHIP	100UH	
L200	1-407-169-XX	INDUCTOR	100UH	
L201	1-408-984-21	INDUCTOR	150UH	
L202	1-407-169-XX	INDUCTOR	100UH	
L203	1-408-969-21	INDUCTOR	8.2UH	
L204	1-408-987-21	INDUCTOR	330UH	
L205	1-408-983-21	INDUCTOR	120UH	
L253	1-408-963-11	INDUCTOR	2.7UH	
L254	1-408-985-21	INDUCTOR	180UH	
L255	1-408-976-21	INDUCTOR	33UH	
L257	1-408-970-21	INDUCTOR	10UH	
L259	1-408-987-21	INDUCTOR	330UH	
L260	1-407-169-XX	INDUCTOR	100UH	
L261	1-408-989-21	INDUCTOR	470UH	
L262	1-408-987-21	INDUCTOR	330UH	
L304	1-408-981-21	INDUCTOR	82UH	
L306	1-408-968-21	INDUCTOR	6.8UH	
L400	1-408-978-21	INDUCTOR	47UH	
L500	1-407-169-XX	INDUCTOR	100UH	
L501	1-407-169-XX	INDUCTOR	100UH	

LEAD PIN

Ref.No	Part No.	Description	Remark
LP001	4-352-844-01	PIN, LEAD, COATING	
LP002	4-352-844-01	PIN, LEAD, COATING	

IC LINK

Ref.No	Part No.	Description	Remark
PS300⚠	1-532-605-00	LINK, IC	

TRANSISTOR

Ref.No	Part No.	Description		Remark
Q001	8-729-901-06	TRANSISTOR	DTA144EK	
Q003	8-729-100-66	TRANSISTOR	2SC1623	
Q004	8-729-100-66	TRANSISTOR	2SC1623	
Q005	8-729-100-66	TRANSISTOR	2SC1623	
Q006	8-729-100-66	TRANSISTOR	2SC1623	
Q007	8-729-901-01	TRANSISTOR	DTC144EK	
Q008	8-729-901-06	TRANSISTOR	DTA144EK	
Q009	8-729-100-66	TRANSISTOR	2SC1623	
Q010	8-729-100-66	TRANSISTOR	2SC1623	
Q011	8-729-216-22	TRANSISTOR	2SA1162	
Q012	8-729-100-66	TRANSISTOR	2SC1623	
Q013	8-729-100-66	TRANSISTOR	2SC1623	
Q014	8-729-216-22	TRANSISTOR	2SA1162	
Q015	8-729-100-66	TRANSISTOR	2SC1623	
Q019	8-729-100-66	TRANSISTOR	2SC1623	
Q020	8-729-100-66	TRANSISTOR	2SC1623	
Q021	8-729-901-01	TRANSISTOR	DTC144EK	
Q022	8-729-100-66	TRANSISTOR	2SC1623	
Q023	8-729-216-22	TRANSISTOR	2SA1162	
Q024	8-729-901-01	TRANSISTOR	DTC144EK	
Q200	8-729-216-22	TRANSISTOR	2SA1162	
Q201	8-729-901-01	TRANSISTOR	DTC144EK	
Q202	8-729-216-22	TRANSISTOR	2SA1162	
Q203	8-729-216-22	TRANSISTOR	2SA1162	
Q204	8-729-100-66	TRANSISTOR	2SC1623	
Q205	8-729-100-66	TRANSISTOR	2SC1623	
Q251	8-729-100-66	TRANSISTOR	2SC1623	
Q252	8-729-100-66	TRANSISTOR	2SC1623	
Q254	8-729-901-06	TRANSISTOR	DTA144EK	

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description				Remark
Q255	8-729-100-66	TRANSISTOR 2SC1623				
Q256	8-729-216-22	TRANSISTOR 2SA1162				
Q257	8-729-100-66	TRANSISTOR 2SC1623				
Q260	8-729-100-66	TRANSISTOR 2SC1623				
Q309	8-729-140-96	TRANSISTOR 2SD774-34				
Q310	8-729-100-66	TRANSISTOR 2SC1623				
Q311	8-729-100-66	TRANSISTOR 2SC1623				
Q312	8-729-100-66	TRANSISTOR 2SC1623				
Q313	8-729-100-66	TRANSISTOR 2SC1623				
Q400	8-729-901-01	TRANSISTOR DTC144EK				
Q401	8-729-901-01	TRANSISTOR DTC144EK				
Q402	8-729-901-01	TRANSISTOR DTC144EK				
Q403	8-729-901-01	TRANSISTOR DTC144EK				
Q404	8-729-901-06	TRANSISTOR DTA144EK				
Q405	8-729-901-06	TRANSISTOR DTA144EK				
Q500	8-729-901-01	TRANSISTOR DTC144EK				
Q501	8-729-100-66	TRANSISTOR 2SC1623				
Q502	8-729-119-78	TRANSISTOR 2SC2785-HFE				
Q503	8-729-216-22	TRANSISTOR 2SA1162				
Q900	8-729-901-01	TRANSISTOR DTC144EK				
Q901	8-729-216-22	TRANSISTOR 2SA1162				

RESISTOR

Ref.No	Part No.	Description				Remark
R001	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R002	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R003	1-216-127-11	METAL GLAZE	1.8M	5%	1/10W	
R004	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R005	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R006	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R008	1-216-095-00	METAL GLAZE	82K	5%	1/10W	
R009	1-216-663-11	METAL CHIP	3.3K	0.50%	1/10W	
R012	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R013	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R016	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R017	1-216-031-00	METAL GLAZE	180	5%	1/10W	
R018	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R019	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R020	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R021	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R022	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R023	1-216-079-00	METAL GLAZE	18K	5%	1/10W	
R024	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R025	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R026	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R027	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R028	1-216-651-11	METAL CHIP	1K	0.50%	1/10W	
R029	1-216-643-11	METAL CHIP	470	0.50%	1/10W	
R030	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R031	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R032-A	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R032-B	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R033	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R034	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R035	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R036	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R037	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R038	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R039	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R040	1-216-035-00	METAL GLAZE	270	5%	1/10W	
R041	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R042	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R044	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R045	1-216-113-00	METAL GLAZE	470K	5%	1/10W	
R046	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R047	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R048	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R049	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R050	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R051	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R052	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R053	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R056	1-216-069-00	METAL GLAZE	6.8K	5%	1/10W	
R059	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R062	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R064	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R065	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R066	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R067	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R068	1-216-083-00	METAL GLAZE	27K	5%	1/10W	
R071	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R072	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R073	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R074	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R075	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R076	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R077	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R078	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R079	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R080	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R081	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R082	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R100	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R101	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R102	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R103	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R104	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R105	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R106	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R107	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R108	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R109	1-216-027-00	METAL GLAZE	120	5%	1/10W	
R110	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R111	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R200	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R201	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R203	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	

When indicating parts by reference number, please include the board name.

VI-101

Ref.No	Part No.	Description				Remark
R204	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R205	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R206	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R207	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R208	1-216-025-00	METAL GLAZE	100	5%	1/10W	
R209	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R210	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R211	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R212	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R213	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R214	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R215	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R250	1-216-029-00	METAL GLAZE	150	5%	1/10W	
R254	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R256	1-216-047-00	METAL GLAZE	820	5%	1/10W	
R257	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R258	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R259	1-216-075-00	METAL GLAZE	12K	5%	1/10W	
R260	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R261	1-216-021-00	METAL GLAZE	68	5%	1/10W	
R262	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R263	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R264	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R265	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R266	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R267	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R268	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R269	1-216-053-00	METAL GLAZE	1.5K	5%	1/10W	
R270	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R271	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R274	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R275	1-216-033-00	METAL GLAZE	220	5%	1/10W	
R276	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R277	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R282	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R283	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R284	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R285	1-216-085-00	METAL GLAZE	33K	5%	1/10W	
R286	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R287	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R288	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R290	1-216-037-00	METAL GLAZE	330	5%	1/10W	
R300	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R303	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R335	1-216-055-00	METAL GLAZE	1.8K	5%	1/10W	
R337	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R338	1-216-048-00	METAL GLAZE	910	5%	1/10W	
R339	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R350	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R351	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R352	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R353	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R354	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	

Ref.No	Part No.	Description				Remark
R355	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R356	1-216-077-00	METAL GLAZE	15K	5%	1/10W	
R357	1-216-067-00	METAL GLAZE	5.6K	5%	1/10W	
R400	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R401	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R402	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R403	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R405	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R406	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R407	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R408	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R409	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R410	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R411	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R412	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R413	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W	
R414	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R500	1-216-081-00	METAL GLAZE	22K	5%	1/10W	
R501	1-216-074-00	METAL GLAZE	11K	5%	1/10W	
R506	1-216-699-11	METAL CHIP	100K	0.50%	1/10W	
R507	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R508	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R509	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R510	1-216-022-00	METAL GLAZE	75	5%	1/10W	
R511	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R512	1-216-295-00	METAL GLAZE	0	5%	1/10W	
R513	1-216-121-00	METAL GLAZE	1M	5%	1/10W	
R516	1-216-020-00	METAL GLAZE	62	5%	1/10W	
R517	1-249-406-11	CARBON	120	5%	1/4W	
R518	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R901	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	
R902	1-216-073-00	METAL GLAZE	10K	5%	1/10W	

VARIABLE RESISTOR

RV001	1-228-994-00	RES, ADJ, CARBON 10K
RV002	1-228-996-00	RES, ADJ, CARBON 47K
RV003	1-228-991-00	RES, ADJ, CARBON 2.2K
RV004	1-228-991-00	RES, ADJ, CARBON 2.2K
RV005	1-228-993-00	RES, ADJ, CARBON 4.7K
RV006	1-228-990-00	RES, ADJ, CARBON 1K
RV007	1-228-990-00	RES, ADJ, CARBON 1K
RV200	1-228-993-00	RES, ADJ, CARBON 4.7K
RV201	1-228-990-00	RES, ADJ, CARBON 1K
RV402	1-228-993-00	RES, ADJ, CARBON 4.7K
RV403	1-228-994-00	RES, ADJ, CARBON 10K
RV500	1-228-996-00	RES, ADJ, CARBON 47K

COIL

T200	1-409-466-11	TRAP

CRYSTAL

X001	1-577-117-11	VIBRATOR, CRYSTAL

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description	Remark
	*A-7062-471-A	PI-24 (P) BOARD, COMPLETE (Ref.No 4,000 Series) *************************	

CAPACITOR

Ref.No	Part No.	Description	Remark
C102	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C103	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C104	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C105	1-163-009-11	CERAMIC CHIP 0.001MF 10%	50V
C106	1-163-009-11	CERAMIC CHIP 0.001MF 10%	50V
C107	1-163-009-11	CERAMIC CHIP 0.001MF 10%	50V
C108	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C109	1-163-117-00	CERAMIC CHIP 100PF 5%	50V
C110	1-163-011-11	CERAMIC CHIP 0.0015MF 10%	50V

CONNECTOR

Ref.No	Part No.	Description	Remark
CN103	1-506-481-11	PIN, CONNECTOR 2P	

JACK

Ref.No	Part No.	Description	Remark
CNJ101	1-561-534-41	SOCKET 21P	
CNJ102	1-563-304-21	JACK BLOCK, PIN 4P	

DIODE

Ref.No	Part No.	Description	Remark
D101	8-719-106-80	DIODE RD13M-B2	
D102	8-719-105-32	DIODE RD2.7M-B2	
D103	8-719-106-43	DIODE RD9.1M-B1	
D104	8-719-106-43	DIODE RD9.1M-B1	
D105	8-719-106-43	DIODE RD9.1M-B1	
D106	8-719-106-43	DIODE RD9.1M-B1	
D107	8-719-106-43	DIODE RD9.1M-B1	
D108	8-719-106-43	DIODE RD9.1M-B1	
D109	8-719-106-43	DIODE RD9.1M-B1	
D110	8-719-106-43	DIODE RD9.1M-B1	
D111	8-719-106-43	DIODE RD9.1M-B1	
D112	8-719-106-43	DIODE RD9.1M-B1	
D113	8-719-106-43	DIODE RD9.1M-B1	
D114	8-719-106-43	DIODE RD9.1M-B1	
D115	8-719-106-43	DIODE RD9.1M-B1	
D116	8-719-106-43	DIODE RD9.1M-B1	

JUMPER RESISTOR

Ref.No	Part No.	Description	Remark
JR004	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR005	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR006	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR007	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR008	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR009	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR010	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR011	1-216-295-00	METAL GLAZE 0 5%	1/10W

TRANSISTOR

Ref.No	Part No.	Description	Remark
Q101	8-729-901-06	TRANSISTOR DTA144EK	
Q102	8-729-901-01	TRANSISTOR DTC144EK	

RESISTOR

Ref.No	Part No.	Description	Remark
R101	1-216-045-00	METAL GLAZE 680 5%	1/10W
R102	1-216-057-00	METAL GLAZE 2.2K 5%	1/10W
R103	1-216-295-00	METAL GLAZE 0 5%	1/10W
R104	1-216-043-00	METAL GLAZE 560 5%	1/10W
R105	1-216-077-00	METAL GLAZE 15K 5%	1/10W
R106	1-216-025-00	METAL GLAZE 100 5%	1/10W
R107	1-216-025-00	METAL GLAZE 100 5%	1/10W
R108	1-216-025-00	METAL GLAZE 100 5%	1/10W
R109	1-216-025-00	METAL GLAZE 100 5%	1/10W
R110	1-216-015-00	METAL GLAZE 39 5%	1/10W
R111	1-216-015-00	METAL GLAZE 39 5%	1/10W

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Ref.No	Part No.	Description	Remark
	*1-636-978-11	RM-44 BOARD (Ref.No 4,000 Series) ************	

CAPACITOR

Ref.No	Part No.	Description	Remark
C201	1-163-809-11	CERAMIC CHIP 0.047MF 10%	25V

CONNECTOR

Ref.No	Part No.	Description	Remark
CN202	1-506-468-11	PIN, CONNECTOR 3P	

DIODE

Ref.No	Part No.	Description	Remark
D202	8-719-106-43	DIODE RD9.1M-B1	
D203	8-719-106-43	DIODE RD9.1M-B1	

JACK

Ref.No	Part No.	Description	Remark
J201	1-562-732-11	SOCKET 5P (CONTROL L)	

JUMPER RESISTOR

Ref.No	Part No.	Description	Remark
JR001	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR002	1-216-295-00	METAL GLAZE 0 5%	1/10W
JR003	1-216-295-00	METAL GLAZE 0 5%	1/10W

RESISTOR

Ref.No	Part No.	Description	Remark
R202	1-216-041-00	METAL GLAZE 470 5%	1/10W

SWITCH

Ref.No	Part No.	Description	Remark
SW202	1-553-725-21	SWITCH, SLIDE (LANC S/M)	

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Ref.No	Part No.	Description	Remark
	*A-7062-473-A	IN-41 (P) BOARD, COMPLETE (Ref.No 7,000 Series) ************************	

CAPACITOR

Ref.No	Part No.	Description	Remark
C004	1-126-157-11	ELECT 10MF 20%	16V
C005	1-126-301-11	ELECT 1MF 20%	50V
C006	1-124-443-00	ELECT 100MF 20%	10V
C008	1-124-472-11	ELECT 470MF 20%	10V

When indicating parts by reference number, please include the board name.

IN-41 AF-20

Ref.No	Part No.	Description				Remark
C010	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C011	1-126-157-11	ELECT	10MF	20%	16V	

CONNECTOR

Ref.No	Part No.	Description
CN001	*1-506-773-11	CONNECTOR, BOARD TO BOARD 10P
CN002	*1-506-773-11	CONNECTOR, BOARD TO BOARD 10P
CN601	*1-568-088-11	CONNECTOR (PLUG) 10P
CN602	1-568-092-11	CONNECTOR (PLUG) 18P
CN603	1-506-469-11	PIN, CONNECTOR 4P
CN604	*1-563-607-11	CONNECTOR, FLEXIBLE 30P
CN701	1-506-472-11	PIN, CONNECTOR 7P
CN702	1-506-474-11	PIN, CONNECTOR 9P
CN703	*1-564-006-21	PIN, CONNECTOR 7P
CN704	1-506-468-11	PIN, CONNECTOR 3P
CN705	1-506-470-11	PIN, CONNECTOR 5P
CN706	1-506-468-11	PIN, CONNECTOR 3P
CN707	1-506-481-11	PIN, CONNECTOR 2P

FILTER

Ref.No	Part No.	Description
FL001	1-235-484-11	FILTER, BAND PASS (1.5MHZ)

COIL

Ref.No	Part No.	Description
L001	1-408-785-21	INDUCTOR CHIP 47UH

TRANSISTOR

Ref.No	Part No.	Description
Q002	8-729-100-66	TRANSISTOR 2SC1623
Q003	8-729-100-66	TRANSISTOR 2SC1623
Q006	8-729-100-66	TRANSISTOR 2SC1623
Q007	8-729-100-66	TRANSISTOR 2SC1623
Q008	8-729-100-66	TRANSISTOR 2SC1623
Q009	8-729-901-05	TRANSISTOR DTA124EK

RESISTOR

Ref.No	Part No.	Description				Remark
R004	1-216-041-00	METAL GLAZE	470	5%	1/10W	
R005	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R006	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R007	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R008	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R009	1-216-045-00	METAL GLAZE	680	5%	1/10W	
R011	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R012	1-216-089-00	METAL GLAZE	47K	5%	1/10W	
R014	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W	
R018	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R019	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R020	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W	
R021	1-216-099-00	METAL GLAZE	120K	5%	1/10W	
R022	1-216-097-00	METAL GLAZE	100K	5%	1/10W	
R023	1-216-051-00	METAL GLAZE	1.2K	5%	1/10W	
R026	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R028	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W	
R031	1-216-049-00	METAL GLAZE	1K	5%	1/10W	
R040	1-216-071-00	METAL GLAZE	8.2K	5%	1/10W	
R041	1-216-039-00	METAL GLAZE	390	5%	1/10W	
R042	1-216-043-00	METAL GLAZE	560	5%	1/10W	
R043	1-216-073-00	METAL GLAZE	10K	5%	1/10W	
R044	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W	

****

*A-7062-474-A AF-20 (P) BOARD, COMPLETE (Ref.No 5,000 Series)

****

CAPACITOR

Ref.No	Part No.	Description				Remark
C501	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C502	1-163-038-00	CERAMIC CHIP	0.1MF		25V	
C503	1-163-007-11	CERAMIC CHIP	680PF	10%	50V	
C504	1-124-465-00	ELECT	0.47MF	20%	50V	
C505	1-163-011-11	CERAMIC CHIP	0.0015MF	10%	50V	
C506	1-163-016-00	CERAMIC CHIP	0.0039MF	10%	50V	
C507	1-163-125-00	CERAMIC CHIP	220PF	5%	50V	
C508	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V	
C509	1-126-177-11	ELECT	100MF	20%	6.3V	
C510	1-163-036-00	CERAMIC CHIP	0.068MF		50V	
C511	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C512	1-124-257-00	ELECT	2.2MF	20%	50V	
C513	1-126-154-11	ELECT	47MF	20%	6.3V	
C514	1-126-163-11	ELECT	4.7MF	20%	25V	
C515	1-163-133-00	CERAMIC CHIP	470PF	5%	50V	
C516	1-126-177-11	ELECT	100MF	20%	6.3V	
C517	1-163-088-00	CERAMIC CHIP	5PF	0.25PF	50V	
C518	1-163-017-00	CERAMIC CHIP	0.0047MF	10%	50V	
C519	1-163-125-00	CERAMIC CHIP	220PF	5%	50V	
C520	1-163-079-00	CERAMIC CHIP	0.039MF	10%	25V	
C521	1-163-020-00	CERAMIC CHIP	0.0082MF	10%	50V	
C522	1-163-007-11	CERAMIC CHIP	680PF	10%	50V	
C523	1-126-160-11	ELECT	1MF	20%	50V	
C524	1-126-157-11	ELECT	10MF	20%	16V	
C525	1-126-157-11	ELECT	10MF	20%	16V	
C526	1-124-638-11	ELECT	22MF	20%	6.3V	
C527	1-126-177-11	ELECT	100MF	20%	6.3V	
C529	1-126-301-11	ELECT	1MF	20%	50V	
C530	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C531	1-126-177-11	ELECT	100MF	20%	6.3V	
C534	1-163-109-00	CERAMIC CHIP	47PF	5%	50V	
C535	1-164-161-11	CERAMIC CHIP	0.0022MF	10%	50V	
C536	1-164-232-11	CERAMIC CHIP	0.01MF		50V	
C539	1-163-088-00	CERAMIC CHIP	5PF	0.25PF	50V	

CONNECTOR

Ref.No	Part No.	Description
CN501	1-563-311-11	CONNECTOR, BOARD TO BOARD 10P
CN502	1-563-311-11	CONNECTOR, BOARD TO BOARD 10P

IC

Ref.No	Part No.	Description
IC501	8-752-013-71	IC CX20137A

When indicating parts by reference number, please include the board name.

Ref.No	Part No.	Description			Remark
		COIL			
L501	1-408-948-00	INDUCTOR	220UH		
		BOARD			
PWB501*	1-619-037-11	AF-20 BOARD			
		RESISTOR			
R501	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R502	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R503	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R504	1-216-121-00	METAL GLAZE	1M	5%	1/10W
R505	1-216-107-00	METAL GLAZE	270K	5%	1/10W
R506	1-249-416-11	CARBON	820	5%	1/4W
R507	1-249-416-11	CARBON	820	5%	1/4W
R508	1-216-097-00	METAL GLAZE	100K	5%	1/10W
R509	1-216-075-00	METAL GLAZE	12K	5%	1/10W
R510	1-216-063-00	METAL GLAZE	3.9K	5%	1/10W
R511	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R512	1-216-045-00	METAL GLAZE	680	5%	1/10W
R513	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R514	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R515	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R516	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R517	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R519	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R521	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R523	1-216-089-00	METAL GLAZE	47K	5%	1/10W
R524	1-216-083-00	METAL GLAZE	27K	5%	1/10W
R525	1-216-079-00	METAL GLAZE	18K	5%	1/10W
R527	1-216-058-00	METAL GLAZE	2.4K	5%	1/10W
R528	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R530	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R531	1-249-428-11	CARBON	8.2K	5%	1/4W
		VARIABLE RESISTOR			
RV503	1-228-994-00	RES, ADJ, CARBON	10K		

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*A-7062-475-A FC-43 (P) BOARD, COMPLETE (Ref.No 1,000 Series)
****

		CAPACITOR			
C801	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C802	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C803	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C804	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C805	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C806	1-163-131-00	CERAMIC CHIP	390PF	5%	50V
C807	1-163-033-00	CERAMIC CHIP	0.022MF		50V
C808	1-164-182-11	CERAMIC CHIP	0.0033MF	10%	50V
C809	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C810	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C811	1-164-232-11	CERAMIC CHIP	0.01MF		50V
C812	1-163-038-00	CERAMIC CHIP	0.1MF		25V
C813	1-126-157-11	ELECT	10MF	20%	16V
C820	1-163-103-00	CERAMIC CHIP	27PF	5%	50V
		DIODE			
D801	8-719-118-21	DIODE 1SS283			
D802	8-719-118-21	DIODE 1SS283			
		DELAY LINE			
DL801	1-415-593-11	DELAY LINE, ULTRASONIC GLASS			
		JUMPER RESISTOR			
JR801	1-216-296-00	METAL GLAZE	0	5%	1/8W
		COIL			
L802	1-408-970-21	INDUCTOR	10UH		
L803	1-408-978-21	INDUCTOR	47UH		
L804	1-407-169-XX	INDUCTOR	100UH		
		TRANSISTOR			
Q801	8-729-100-66	TRANSISTOR 2SC1623			
Q802	8-729-100-66	TRANSISTOR 2SC1623			
Q803	8-729-100-66	TRANSISTOR 2SC1623			
Q804	8-729-100-66	TRANSISTOR 2SC1623			
Q805	8-729-100-66	TRANSISTOR 2SC1623			
Q806	8-729-100-66	TRANSISTOR 2SC1623			
Q807	8-729-100-66	TRANSISTOR 2SC1623			
Q808	8-729-100-66	TRANSISTOR 2SC1623			
Q809	8-729-901-06	TRANSISTOR DTA144EK			
		RESISTOR			
R801	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R802	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R803	1-216-057-00	METAL GLAZE	2.2K	5%	1/10W
R804	1-216-033-00	METAL GLAZE	220	5%	1/10W
R805	1-216-041-00	METAL GLAZE	470	5%	1/10W
R806	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R807	1-216-065-00	METAL GLAZE	4.7K	5%	1/10W
R808	1-216-073-00	METAL GLAZE	10K	5%	1/10W
R809	1-216-031-00	METAL GLAZE	180	5%	1/10W
R810	1-216-043-00	METAL GLAZE	560	5%	1/10W
R811	1-216-041-00	METAL GLAZE	470	5%	1/10W
R812	1-216-059-00	METAL GLAZE	2.7K	5%	1/10W
R813	1-216-039-00	METAL GLAZE	390	5%	1/10W
R814	1-216-081-00	METAL GLAZE	22K	5%	1/10W
R815	1-216-085-00	METAL GLAZE	33K	5%	1/10W
R816	1-216-041-00	METAL GLAZE	470	5%	1/10W
R817	1-216-049-00	METAL GLAZE	1K	5%	1/10W
R818	1-216-027-00	METAL GLAZE	120	5%	1/10W
R819	1-216-061-00	METAL GLAZE	3.3K	5%	1/10W
R820	1-216-037-00	METAL GLAZE	330	5%	1/10W

When indicating parts by reference number, please include the board name.

FC-43 UC-3 CC-23

Ref.No	Part No.	Description	Remark
R821	1-216-041-00	METAL GLAZE 470 5% 1/10W	
R822	1-216-073-00	METAL GLAZE 10K 5% 1/10W	
R823	1-216-037-00	METAL GLAZE 330 5% 1/10W	
R824	1-216-047-00	METAL GLAZE 820 5% 1/10W	
R825	1-216-077-00	METAL GLAZE 15K 5% 1/10W	
R826	1-216-085-00	METAL GLAZE 33K 5% 1/10W	
R827	1-216-065-00	METAL GLAZE 4.7K 5% 1/10W	
R828	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	
R829	1-216-067-00	METAL GLAZE 5.6K 5% 1/10W	

VARIABLE RESISTOR

Ref.No	Part No.	Description	Remark
RV801	1-228-993-00	RES, ADJ, CARBON 4.7K (LEVEL)	

* * *

*1-628-908-11 UC-3 BOARD (Ref.No 3,000 Series)

CONNECTOR

Ref.No	Part No.	Description	Remark
CN001	1-566-529-11	CONNECTOR, FPC (ZIF) 13P	
CN002	1-566-527-11	CONNECTOR, FPC (ZIF) 11P	

JUMPER RESISTOR

Ref.No	Part No.	Description	Remark
JR001	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR002	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR003	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR004	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR005	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR006	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR008	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR009	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR010	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR011	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR012	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR013	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR019	1-216-296-00	METAL GLAZE 0 5% 1/8W	
JR022	1-216-295-00	METAL GLAZE 0 5% 1/10W	
JR023	1-216-296-00	METAL GLAZE 0 5% 1/8W	

CONNECTOR

Ref.No	Part No.	Description	Remark
W001	1-574-353-11	CABLE, FLAT (1.0MM PITCH) 18P	

* * *

*1-628-694-21 CC-23 BOARD (Ref.No 2,600 Series)

CONNECOTR

Ref.No	Part No.	Description	Remark
CN001	*1-562-880-21	CONNECOTR, CARD EDGE 15P	

CONNECTOR

Ref.No	Part No.	Description	Remark
W001	1-574-354-11	CABLE, FLAT (1.0MM PITCH) 15P	

MISCELLANEOUS

Ref.No	Part No.	Description	Remark
	1-466-328-31	MODULATOR, RF (RFU-2027)	
	1-466-347-31	MODULATOR, RF (RFU-2028) (UK MODEL)	
M902	8-835-331-01	MOTOR, DC U-22A (CAPSTAN MOTOR)	
M903	A-7040-160-A	MOTOR ASSY, THREADING (LOADING MOTOR)	

* * *

ACCESSORIES AND PACKING MATERIALS

Part No.	Description	Remark
1-465-590-11	REMOTE COMMANDER (RMT-463)	
1-551-513-00	CORD ASSY, COAXIAL	
⚠1-558-032-11	CORD, POWER (UK MODEL)	
1-574-039-21	CORD, CONNECTION	
⚠1-575-132-11	CORD, POWER (AEP, E MODEL)	
3-695-308-01	DRIVER, VOLUME	
*3-704-282-01	BAG (STANDARD), PROTECTION	
*3-735-224-31	INDIVIDUAL CARTON	
*3-735-225-02	CUSHION (LEFT)	
*3-735-226-02	CUSHION (RIGHT)	
*3-735-228-01	SPACER	
3-750-104-11	MANUAL, INSTRUCTION (ENGLISH)	
3-750-104-41	MANUAL, INSTRUCTION (AEP MODEL) (FRENCH/GERMAN/SPANISH)	
3-750-104-51	MANUAL, INSTRUCTION (AEP MODEL) (SWEDISH/DUTCH/ITALIAN)	
*3-940-469-01	CASE, ACC	

* * *

HARDWARE LIST

SCREW

Part No.	Description
7-621-772-20	SCREW +B 2X5
7-627-555-88	PRECISION SCREW +P 1.4X1.8
7-627-553-37	PRECISION SCREW +P 2X3 TYPE 3
7-627-553-47	PRECISION SCREW +P 2X4 TYPE 3
7-685-646-79	SCREW +BVTP 3X8 TYPE2 IT-3
7-685-646-79	SCREW +BVTP 3X8 TYPE2

* * *

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board name.

SECTION 8
MECHANICAL ADJUSTMENTS

For mechanical adjustments, refer to the separate "8mm Video Mechanical Adjustments Manual Ⅲ (U mechanism)"

8-1. Tape pass adjustment

[Track shift]

Based on four types of pilot signals, the 8mm video system controls the tape transport speed instantaneously and uses ATF (Automatic Track Finding) to attain high-precision tracking. This makes a tracking adjustment control knob unnecessary. Accurate tracing has also been realized.

However, the ATF system has caused a problem in adjusting the tape pass system. The tape pass cannot be adjusted completely because the ATF automatically compensates even if the head's tracing fluctuates slightly.

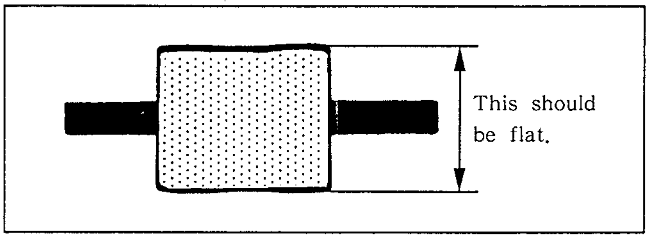
Therefore, to do fine tracking adjustment, first switch to the track shift mode. Since the ATF is forced to operate and the tracking amount (approx. ¼) shifts to a constant amount, fine tracking adjustment can be easily done. A track shift jig is unnecessary.

8-1-1. Setting the track shift mode

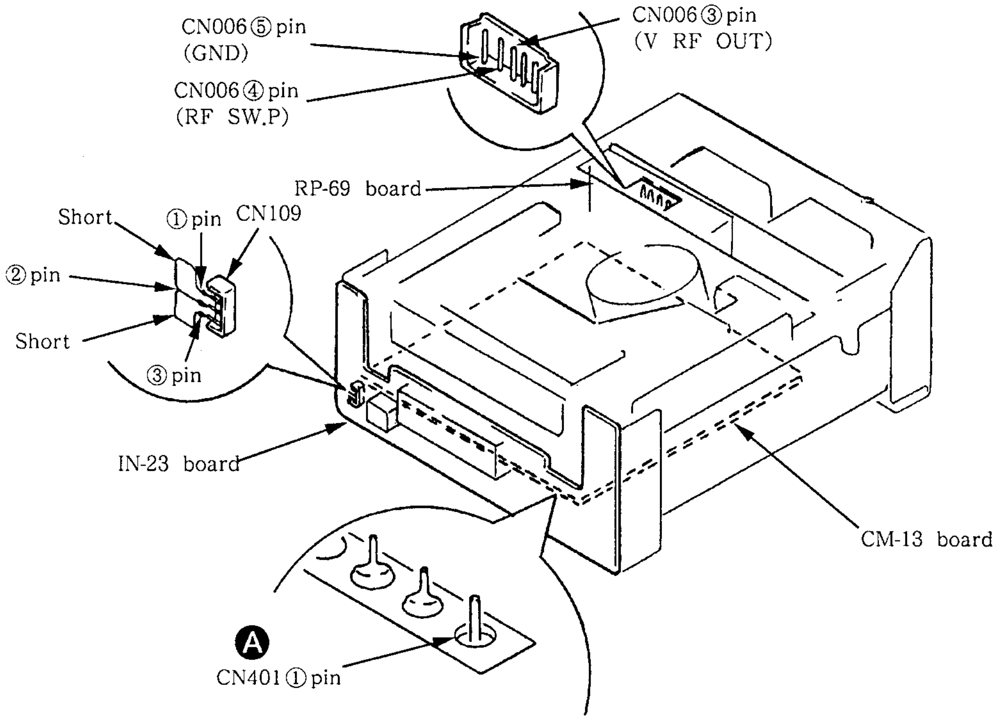
1) Remove the soldering of the CM-13 board's pin ① 🅐 . Lift up the pin from the pattern and land.
2) Short the FR-38 boards CN109 pin ② to CN109 pin ① ③.
3) Switch to the test mode.

8-1-2. Preparation for adjustment

1) Clean the tape transport surfaces (tape guide, drum, capstan, and pinch roller).
2) Connection to an oscilloscope and waveform output.
   1ch : The drum head's RF signal output CN006 pin ③ (V RF OUT)
   Output method : Connect the external trigger output CN006 pin ④ (RF SW. P) to CN006 pin ⑤ (GND).
3) Playback the tracking alignment tape (WR5-1N).
4) Check if the entry and exit sides of the oscilloscope's RF waveform are flat.
   If they are not flat, make the adjustment by following the separately published U mechanical series mechanical adjustment manual.



5) After the adjustment is completed, solder the CM-13 board's CN401 pin ① 🅐 and remove from the FR-38 board's CN109.



SECTION 9
ELECTRICAL ADJUSTMENTS

9-1. PREPARATION FOR ELECTRICAL SECTION ADJUSTMENT

See adjusting·elements location diagram on page 134 for the adjustments.

◆

For electrical adjustment, use the following measuring instruments.

[Instruments to be used]

1) Monitor TV
2) Oscilloscope : 2 phenomena, band 10MHz or wider, with delay mode (Use probe 10 : 1 unless specified otherwise)
3) Frequency counter
4) Pattern generator with video output terminal
5) Digital voltmeter
6) Audio generator
7) Audio level meter
8) Audio distortion meter
9) Audio attenuator
10) Alignment tape
    For tracking adjustment
        (WR5-1C) Part code : 8-967-995-06
    For video frequency characteristics adjustment
        (WR5-2C) Part code : 8-967-995-16
    For operation confirmation (SP mode)
        (WR5-3CSP) Part code : 8-967-995-27
    For operation confirmation (LP mode)
        (WR5-3CL) Part code : 8-967-995-36

[Connection of the instruments]

Unless specified otherwise, perform the adjustment by connecting the measuring instruments as shown in the figure below.

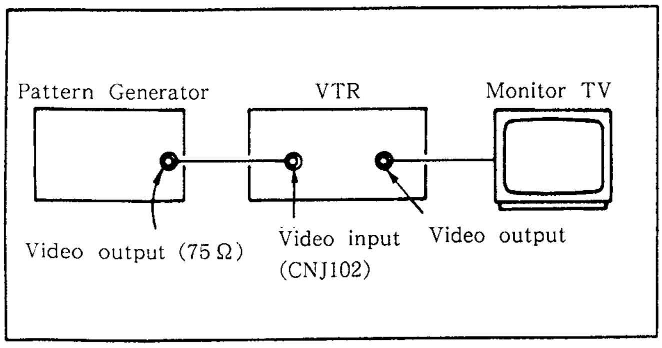

Pattern Generator
VTR
Monitor TV
Video output (75 Ω)
Video input
(CNJ102)
Video output

Fig. 9-1.

[Set-up for adjustment]

The video signal from the pattern generator is used as adjustment signal, so it must be within specifications. Connect the oscilloscope to CNJ102 on the PI-24 board (VIDEO IN) and confirm that amplitude of the video signal sync component is approx. 0.3V, amplitude of the video component approx. 0.7V, and amplitude of the burst component approx. 0.3V with a flat shape. Also confirm that the ratio between burst and red levels is 0.30 : 0.66.

The video (color bar) signal used for electrical adjustment is shown in Fig. 9-2.

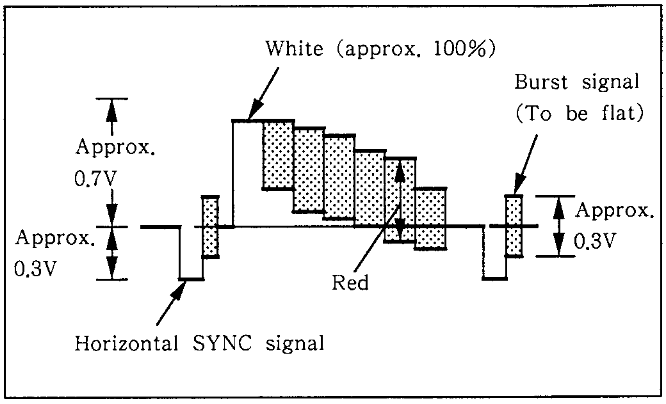

White (approx. 100%)
Burst signal
(To be flat)
Approx.
0.7V
Approx.
0.3V
Approx.
0.3V
Red
Horizontal SYNC signal

Fig. 9-2.

[**Alignment tapes**]

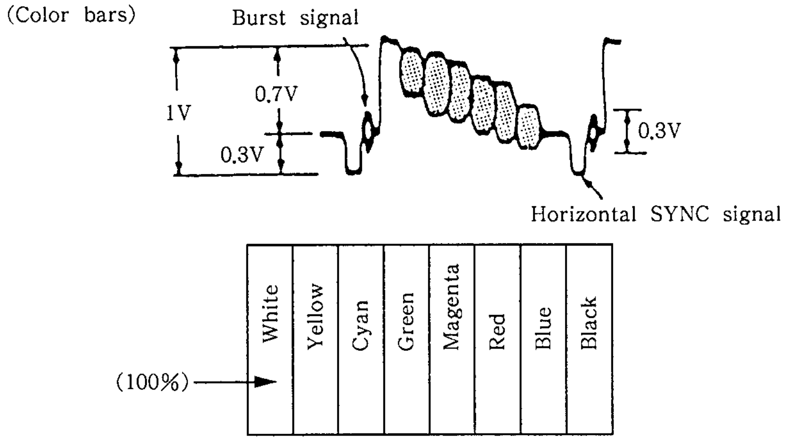
Tape	Content	Use
Tracking (WR5-1C)	1. Recording area : PCM-video 2. Recording content : CH2 : 1MHz linearity adjustment signal	Drum linearity adjustment
Video Frequency Response (WR5-2C)	1. Recording area : Video 2. Recording content : RF sweep 0 to 10MHz 3. Maker : 1, 3.58, 5.5 and 7MHz	Frequency response adjustment
Operation Check SP mode (WR5-3CSP) LP mode (WR5-3CL) Note : PCM area is not included in WR5-3CL	1. Recording area : Video 2. Recording content : ■ Video track • Video signals Color bars 10sec } Iterative Monoscope 8sec }  (Color bars) Burst signal 1V 0.7V 0.3V 0.3V Horizontal SYNC signal White Yellow Cyan Green Magenta Red Blue Black (100%) • Audio signals (AFM) 400Hz 60% modulation ■ PCM area (WR5-3CSP only) • Audio signals (PCM) 1kHz 10sec } 20Hz 2sec } Iterative 400Hz 4sec } 14kHz 2sec }	Operation check

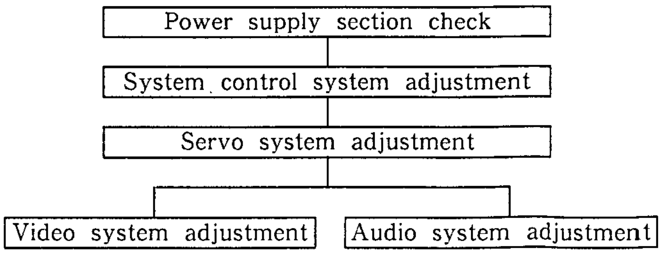
Fig. 9-3.

[**Input/output level and impedance**]

Video input Pin jack
Input signal : 1Vp-p, 75 Ω unbalanced, negative sync
Video output Pin jack and 21p EURO
Output signal : 1Vp-p, 75 Ω unbalanced, negative sync
Audio input Pin jack
Input level : −10dBs (0dBs = 0.775Vrms)
Input impedance : 47k Ω or over
Audio output Pin jack
Specified output : −7.5dBs
Output impedance : 2.2kΩ or less
21p EURO
Specified output −6dBs
Output impedance : 1kΩ or less

[**Adjustment order**]

Perform the adjustment in the following order.


Power supply section check
System control system adjustment
Servo system adjustment
Video system adjustment
Audio system adjustment

9-2. POWER SUPPLY VOLTAGE CHECK

Perform the measurement in playback mode.

1. UN 5.6V confirmation
   Pin ⑤ of CN701(IN-41 board)should be 5.6±0.2Vdc.

2. UN 9V confirmation
   Pin ① of CN701 (IN-41 board) should be 9.3±1Vdc.

3. SW 5V confirmation
   Pin ⑥ of CN701(IN-41 board)should be 5.0±0.2Vdc.

4. SW 9V confirmation
   Pin ③ of CN701(IN-41 board)should be 9.0±0.3Vdc.

9-3. SYSTEM CONTROL SYSTEM ADJUSTMENTS

9-3-1. Mode Control, LCD Drive Microcomputer Oscillator Confirmation (FR-38 Board)

Mode	E-E
Signal	Arbitrary
Measurement Point	Pin ㉚ of IC101
Measuring Instrument	Frequency counter
Specified Value	4.19±0.04MHz

9-3-2. LINCS MASTER Microcomputer Oscillator Confirmation (FR-38 Board)

Mode	E-E
Signal	Arbitrary
Measurement Point	Pin ⑥ of IC201
Measuring Instrument	Frequency counter
Specified Value	6±0.006MHz

9-4. SERVO SYSTEM ADJUSTMENT

9-4-1. Oscillation Frequency Adjustment (CM-13 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ⑦ of IC502
Measuring Instrument	Frequency counter
Adjusting Element	RV501
Specified Value	479.89±5.0kHz

9-4-2. Switching Position Adjustment (CM-13 Board)

Mode	Playback
Signal	Alignment tape : For operation confirmation (WR5-3CSP)
Measurement Point	CH-1 : Pin ③ of IC201 (VIDEO OUT) CH-2 : Pin (80) of IC401 (RF SWP)
Measuring Instrument	Oscilloscope
Adjusting Element	RV401
Specified Value	6.5±0.3H (410±20 μsec)

Adjusting method :

1) Short between Pin ③ and Pin ② on Board FR-38 CN109 (Test 2 mode).
2) Set to 6.5±0.3H (410±20μ s) with RV401.

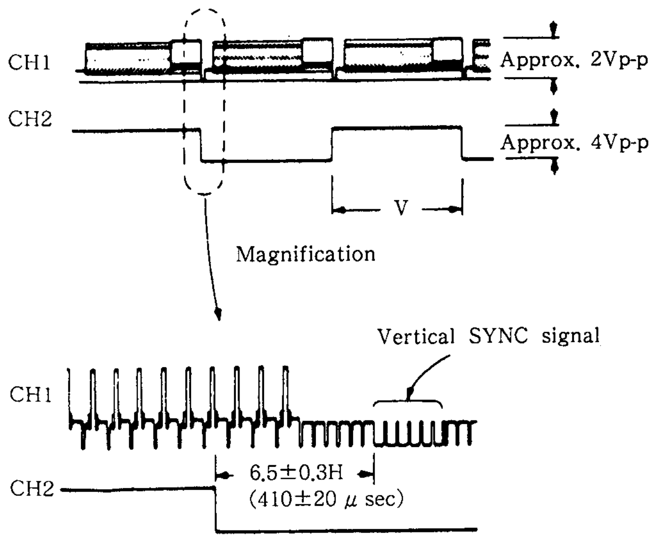


Fig. 9-4. Switching position adjustment

9-4-3. Playback SP/LP mode Adjustment (CM-13 Board)

Mode	Various playback (CUE)
Signal	Alignment tape : For operation confirmation (SP mode : WR5-3CSP) (LP mode : WR5-3CL)
Measurement Point	Pin ② and ③ of IC302
Measuring Instrument	Digital voltmeter
Adjusting Element	RV301
Specified Value	$\frac{(V_S + V_L)}{2}$

Adjusting method :

1) Set S602 (SP/LP) to LP, then playback an SP mode tape (WR5-3CSP) in cue mode.
2) Measure the voltage at IC302 Pin ② with a digital voltmeter and record.(V_S)
3) Set S602 (SP/LP) to SP, then playback an LP mode tape (WR5-3CL) in cue mode.
4) Measure the voltage at IC201 Pin ② with a digital voltmeter and record.(V_L)
5) Adjust RV301 so that the voltage at Pins ③ of IC302 is $(V_S + V_L)/2$.

9-5. VIDEO ADJUSTMENT

As a rule, video system adjustment should be performed in accordance with the following order. The color video signal supplied from the pattern generator is used as video input signal for video system adjusting in the recording mode. Confirm that the SYNC signal and color burst signal conform to the set-up specifications during adjustment as shown in Fig. 5-2.

[Adjusting order]

1. Playback frequency characteristics adjustment
2. Flying erase check
3. Crystal oscillator fo adjustment
4. SYNC AGC adjustment
5. Y/C separation adjustment
6. Burst frag adjustment
7. Emphasis Input adjustment
8. PB CCD Input level adjustment
9. PB Y level adjustment
10. Y FM carrier frequency adjustment
11. Y FM deviation adjustment
12. AC clip adjustment
13. Chroma Emphasis fo adjustment
14. REC Y recording current adjustment
15. REC C level adjustment
16. Qvasi burst phase adjustment
17. Delay burst phase adjustment
18. REC ATF level adjustment

9-5-1. Playback Frequency Characteristics Adjustment (RP-69 Board)

1. CH1 and CH2 Adjustment

The adjusting element for CH2 is shown in parenthesis [ ].

Mode	Playback
Signal	Alignment tape : For frequency characteristics adjustment (WR5-2C)
Measurement Point	Pin ③ of CN006 External trigger : Pin ④ of CN006 Trigger slope : − [+]
Measuring Instrument	Oscilloscope
Adjusting Element	RV004 [RV003]
Specified Value	The ratio between the 5.5MHz level and the 3.58MHz level is 3 : 4.

Adjusting method :

1) Adjust RV004 [RV003] so that the ratio of the 3.58MHz level and 5.5MHz level is 4 : 3 [4 : 3].

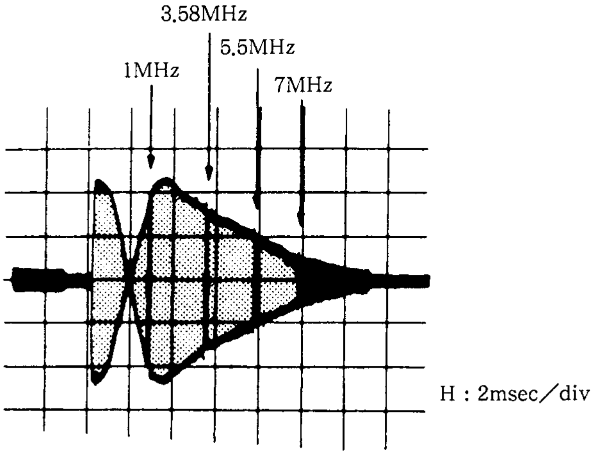


Fig. 9-6. Playback frequency characteristics adjustment

2. CH1' Adjustment

Mode	Playback pause (Still)
Signal	·Alignment tape : For frequency characteristics adjustment (WR5-6N)
Measurement Point	Pin ① of CN006 External trigger : Pin ④ of CN006 Trigger slope : +
Measuring Instrument	Oscilloscope
Adjusting Element	RV201
Specified Value	The ratio between the 5.5MHz level and the 3.58MHz level is 3.5 : 4

Adjusting method :

1) Shor the equivalent to Pin ③ of CN109 on Board FR-38 and Pin ② (Test 2 mode).
2) Adjust RV201 so that the ratio between the 5.5MHz level and the 3.58MHz level is 3.5 : 4.

9-5-2. Flying Erase Check (RP-69 Board)

Mode	Recording
Signal	Arbitrary
Measurement Point	Pin ② of CN001
Measuring Instrument	Frequency counter and oscilloscope
Specified Value	Frequency : 8.3±0.5MHz Voltage : Approx. 8Vp-p or more

Note : 1) Use an MP type tape.
2) Connect a frequency counter through a high input impedance (1MΩ or more), low-capacitance (10pF or less) buffer amp (oscilloscope or the like).

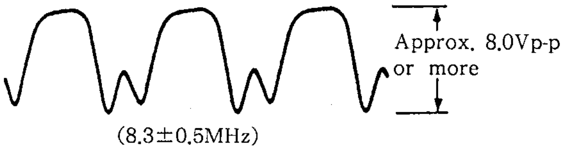


Fig. 9-7. Flying erase check

9-5-3. Crystal Oscillator fo Check (VI-101 Board)

Mode	Playback
Signal	Alignment tape : For operation confirmation (WR5-3CSP)
Measurement Point	Pin ⑯ of IC001
Measuring Instrument	Frequency counter
Specified Value	4433619±150Hz

Note : Connect the frequency counter through a buffer having high impedance (approx. 10MΩ) and low capacity (less than 10pF).

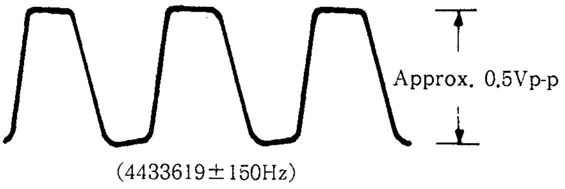


Fig. 9-8. Crystal oscillator fo check

9-5-4. SYNC AGC Adjustment (VI-101 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ㊾ of IC001
Measuring Instrument	Oscilloscope
Adjusting Element	RV500
Specified Value	0.5±0.02Vp-p

Note : VIDEO OUT terminal (CNJ102 on PI-24 board) should be terminated with 75 Ω.

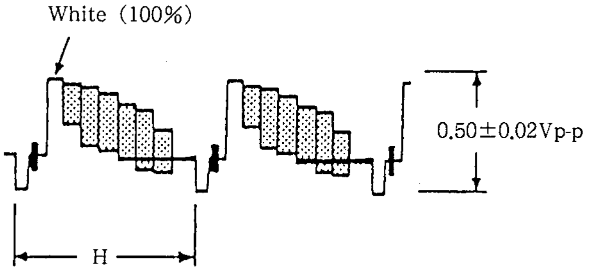


Fig. 9-9. SYNC AGC adjustment

9-5-5. Y/C Separation Adjustment (VI-101 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ㉕ of IC001
Measuring Instrument	Oscilloscope
Adjusting Element	RV001
Specified Value	Under 150mVp-p (residual chroma component)

Adjusting method :
1) Adjust RV001 so as to minimize the residual chroma component.

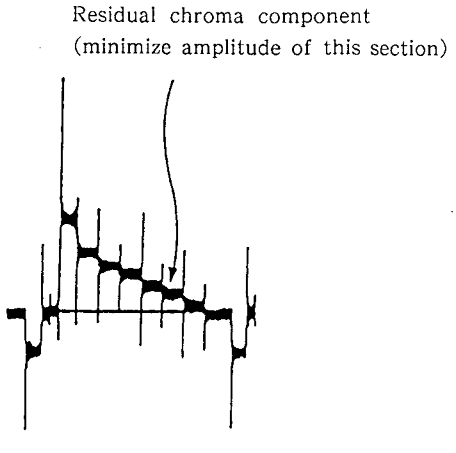

Residual chroma component
(minimize amplitude of this section)

Fig. 9-10. Y/C separation adjustment

9-5-6. Burst Frag Adjustment (VI-101 Board)

Mode	Recording
Signal	Color bar
Measurement Point	CH1 : Pin ⑤ of IC001 (REC C RF OUT) CH2 : Pin ⑧ of IC001 (BF OUT)
Measuring Instrument	Oscilloscope
Adjusting Element	RV002
Specified Value	a=b (Refer to Fig. 5-9.)

Adjusting method :

1) Use RV002 to match the falling edge of the CH2 burst pulse to the center of the CH1 burst signal. (See Figure 5-9.)

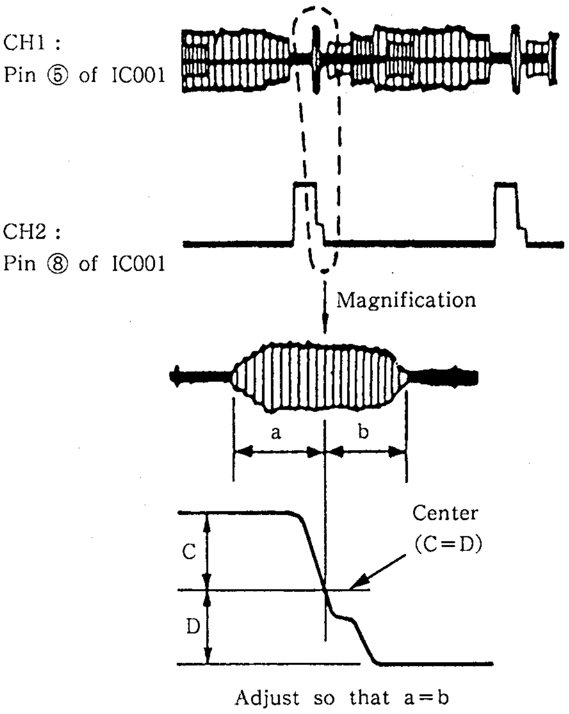

CH1 :
Pin ⑤ of IC001
CH2 :
Pin ⑧ of IC001
Magnification
a
b
Center
(C=D)
C
D
Adjust so that a=b

Fig. 9-11. burst frag

9-5-7. Emphasis Adjustment (VI-101 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin (54) of IC001
Measuring Instrument	Oscilloscope
Adjusting Element	RV003
Specified Value	0.5±0.02Vp-p

Adjusting method :

1) Adjust to 0.50±0.02Vp-p with RV003.

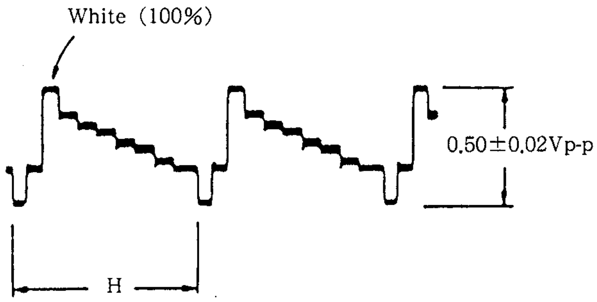

White (100%)
0.50±0.02Vp-p
H

Fig. 9-12. Emphasis input level adjustment

9-5-8. PB CCD Input Level Adjustment (VI-101 Board)

Mode	Playback
Signal	Alignment tape for operation confirmation (WR5-3CSP) color bar section
Measurement Point	Pin ㊼ of IC001
Measuring Instrument	Oscilloscope
Adjusting Element	RV006
Specified Value	0.5±0.02Vp-p

Adjusting method :

1) Adjust to 0.50±0.02Vp-p with RV006.

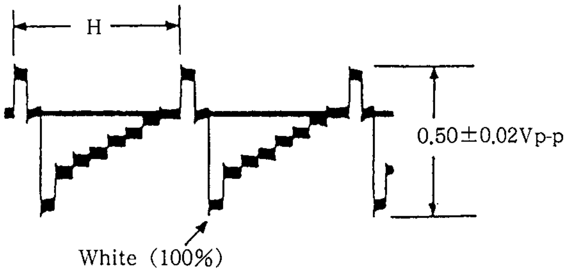

H
0.50±0.02Vp-p
White (100%)

Fig. 9-13. PB CCD input level adjustment

9-5-9. PB Y Level Adjustment (VI-101 Board)

Mode	Playback
Signal	Alignment tape : For operation confirmation (WR5-3CSP) Color bar section
Measurement Point	Pin ③ of CN006
Measuring Instrument	Oscilloscope
Adjusting Element	RV007
Specified Value	1.00±0.05Vp-p

Note : 1) The VIDEO OUT terminal (CNJ102 on the PI-24 board) must be terminated in 75 Ω.

Adjusting method :

1) Adjust to 1.00±0.05Vp-p with RV007.

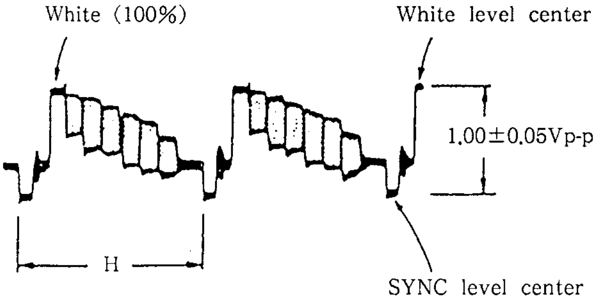


Fig. 9-14. PB Y level adjustment

9-5-10. Y FM Carrier Frequency Adjustment (VI-101 Board)

Mode	E-E
Signal	Non-signal
Measurement Point	Pin (59) of IC001
Measuring Instrument	Frequency counter
Adjusting Element	RV005
Specified Value	4.38±0.02MHz

Adjusting method :

1) Adjust to 4.38±0.02MHz with RV005.
2) Perform "Deviation Adjustment" and "Emphasis Adjustment" after this adjustment.

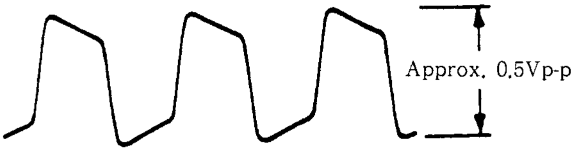


Fig. 9-15. Y FM Carrier Frequency Adjustment

9-5-11. Y FM Deviation Adjustment (VI-101 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ③ of CN006 : VIDEO OUT
Measuring Instrument	Oscilloscope
Adjusting Element	RV004
Specified Value	Playback level : 1.00±0.05Vp-p

Note : 1) "PB Y Level Adjustment" and "Y FM Carrier Frequency Adjustment" should have been completed.
2) VIDEO OUT terminal (CNJ102 on PI-24 board) should be terminated with 75 Ω.
3) EDIT switch (SW022 on FR-38 board) should be turned OFF.

Adjusting method :

1) Record color bar signal.
2) Play back the recorded signal.
3) Confirm the playback output level.
   Specified value : 1.00±0.05Vp-p
4) If the specified value is not satisfied, repeat steps 1) to 3) after turning RV004 as shown in the table below.(Table. 9)

	RV004 turning direction
When larger than specified value	Clock wise (↻)
When smaller than specified value	Counter clock wise (↺)

Table. 9.

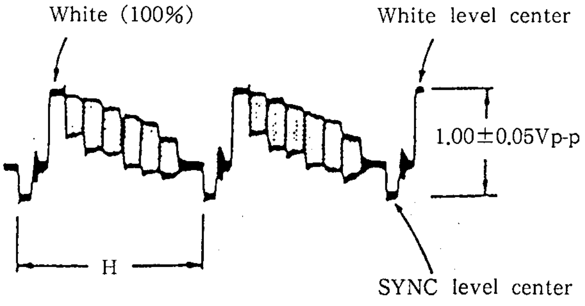


Fig. 9-16. Y FM deviation adjustment

9-5-12. AC Clip Check (VI-101 Board)

Mode	Recording
Signal	Color bar
Measurement Point	Pin ㉕ of IC001
Measuring Instrument	Oscilloscope
Specified Value	240±10%

Adjusting method :

1) Confirm that the white (100%) peak of the waveform output from pin ㉕ of IC001 is 240±10%.

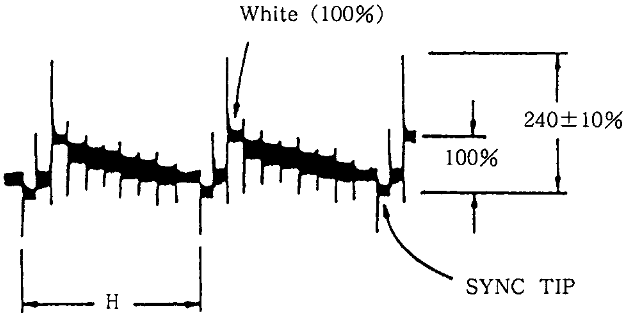


Fig. 9-17. AC clip check

9-5-13. Chroma Emphasis fo Adjustment (VI-101 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ⑤ of IC001
Measuring Instrument	Oscilloscope
Adjusting Element	FL002
Specified Value	Minimum fo component

Adjusting method :

1) Adjust FL002 so that the amplitude of the flat section of the red portion become minimum.

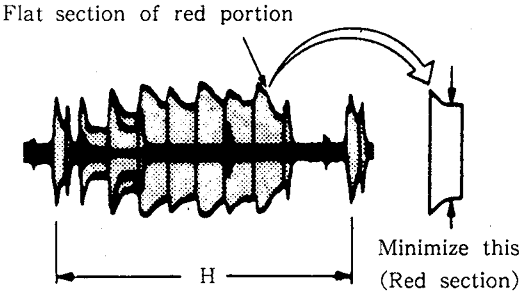


Fig. 9-18. Chroma emphasis fo adjustment

9-5-14. REC Y Level Adjustment (VI-101 Board)

Mode	E-E
Signal	Non-signal
Measurement Point	Pin ② of CN003
Measuring Instrument	Oscilloscope
Adjusting Element	RV200
Specified Value	0.31±0.01Vp-p

9-5-15. REC C Level Adjustment (VI-101 Board)

Mode	E-E
Signal	Color bar
Measurement Point	Pin ③ of CN003
Measuring Instrument	Oscilloscope
Adjusting Element	RV201
Specified Value	150±10mVp-p

Note : 1) Be sure to always perform REC AFM level confirm and REC ATF level confirm after performing REC C level adjustment.

2) Use MP-type tape.

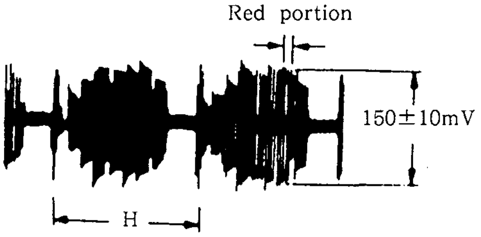


Fig. 9-19. REC C level adjustment

9-5-16. Quasi Burst Phase Adjustment (VI-101 Board)

1. Method using vectorscope

Mode	Playback
Signal	Tape with recorded color bars
Measurement Point	VIDEO OUT terminal
Measuring Instrument	Vectorscope
Adjusting Element	RV402
Specified Value	Phase of color luminance points in quasi burst mode is same sa phase of color luminance points in through burst mode

Adjusting method :
1) Make a record of the phase of the color luminance points (especially red). (Through burst mode)
2) Connect pin ㉑ of IC400 and pin ① of IC400 with a diode (1SS119, etc.). (Quasi burst mode)

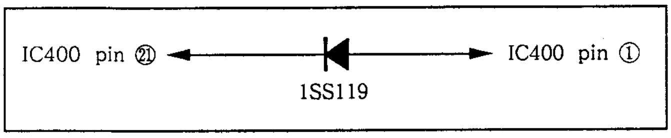


Fig. 9-20.

3) Adjust RV402 so that the phase of the color luminance points is the same as the phase recorded in 1).
4) Remove the diode.

2. Method using monitor TV

Mode	Playback
Signal	Tape with recorded color bars
Measurement Point	Confirmation on monitor TV screen
Measuring Instrument	
Adjusting Element	RV402
Specified Value	Minimum chroma flickering

Connection :
1) Connect pin ㉑ of IC400 and pin ④ of CN002 (RF SWP) using a diode (1SS119, etc.).

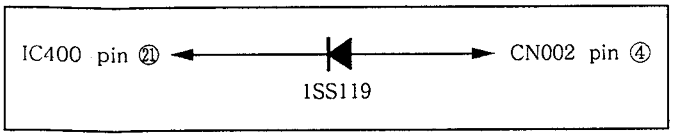


Fig. 9-21.

Adjusting method :
1) Set the color level of the monitor TV to maximum.
2) Adjust RV402 for minimum chroma flickering.

9-5-17. Delay Burst Phase Adjustment (VI-101 Board)

Mode	Playback pause (LP mode)
Signal	Alignment tape for operation check (WR5-3CL), color bars
Measurement Point	Confirmation on monitor TV screen
Measuring Instrument	
Adjusting Element	RV403
Specified Value	Minimum chroma flickering

Adjusting method :
1) Set the color level of the monitor TV to maximum.
2) Rotate RV403 fully in the counterclockwise direction (↺).
3) Slowly rotate RV403 in the clockwise direction and stop at the position where there is minimum chroma flicker.

9-5-18. REC ATF Level Confirmation (CM-13 Board)

Mode	REC
Signal	Non-signal
Measurement Point	Pin ⑧ of CN401
Measuring Instrument	Oscilloscope
Specified Value	380±40mVp-p

Note : Use MP type tape.

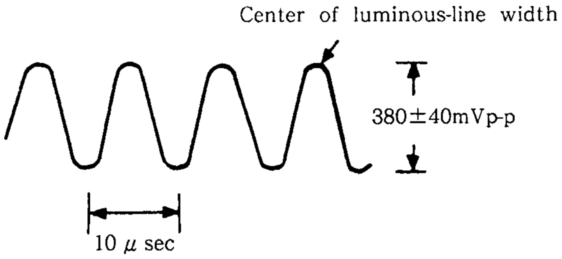


Fig. 9-22. REC ATF level confirmation

9-6. AUDIO SYSTEM ADJUSTMENTS

- Perform the adjustment by using the color bar signal as video signal input.

[Connection of audio measuring instruments]
Connect audio system measuring instruments as shown in the following diagram in addition to the video system measuring instruments.

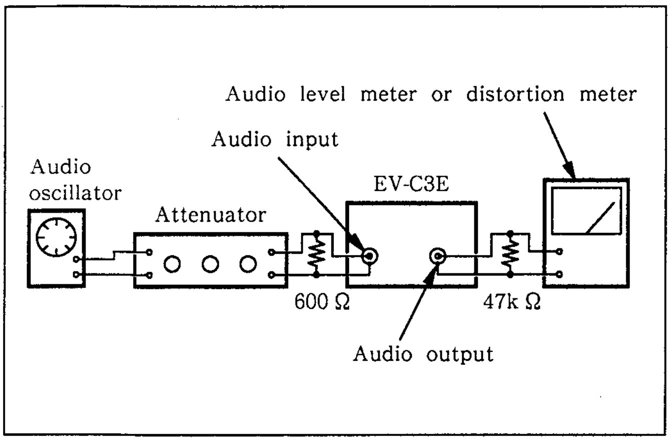

Audio level meter or distortion meter
Audio input
Audio oscillator
EV-C3E
Attenuator
600 Ω
47k Ω
Audio output

Fig. 9-23.

9-6-1. AFM Audio System Adjustment

[Adjusting order]

1. AFM carrier frequency adjustment
2. PB Level check
3. E-E output level check
4. Overall-level characteristics check
5. Overall-frequency characteristics check
6. Overall-distortion check
7. Overall-noise level check

1. AFM Carrier Frequency Adjustment (AF-20 Board)

Mode	Recording (SP mode)
Signal	Non-signal
Measurement Point	Pin ⑬ of CN502
Measuring Instrument	Frequency counter and oscilloscope
Adjusting Element	RV503
Specified Value	1500±3kHz

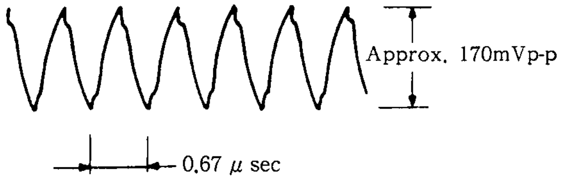

Approx. 170mVp-p
0.67 μ sec

Fig. 9-24. AFM carrier frequency adjustment

2. PB Level Check (AF-20 Board)

Mode	Playback
Signal	Alignment tape (WR5-3CSP)
Measurement Point	CNJ102 RCA JACK Audio output
Measuring Instrument	Audio level meter
Specified Value	−7.5±3dBs

3. E-E Output Level Check

Mode	E-E
Signal	400Hz, −7.5dBs : Audio input
Measurement Point	CNJ102 RCA JACK Audio output
Measuring Instrument	Audio level meter
Specified Value	−7.5±2dBs

4. Overall Level Characteristics Check

Mode	Self-recording (SP mode)
Signal	400Hz, −7.5dBs : Audio input
Measurement Point	CNJ102 RCA JACK Audio output
Measuring Instrument	Audio level meter
Specified Value	−7.5±3dBs

Checking method :
1) Record the signal.
2) Play back the recorded section.
3) Confirm that the audio output level is −7.5±3dBs.

5. Overall Frequency Characteristics Check

Mode	Self-recording
Signal	Ⓐ 400Hz, −20dBs Ⓑ 30Hz, −20dBs Ⓒ 14kHz, −20dBs Audio output
Measurement Point	Audio output
Measuring Instrument	Audio level meter
Specified Value	When 400Hz playback output level is 0dB, 30Hz and 14kHz playback output level should be 0±3dB

Checking method :
1) Record signals of Ⓐ to Ⓒ in sequence.
2) Play back the recorded section.
3) Confirm that when the 400Hz playback output level is 0dB, the 30Hz and 14kHz playback output levels are both 0±3dB.

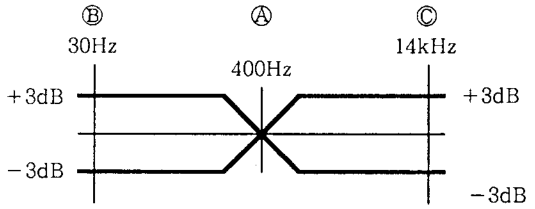


Fig. 9-25. AFM overall frequency characteristics check

6. Overall Distortion Check

Mode	Self-recording
Signal	400Hz, −7.5dBs : Audio input
Measurement Point	Audio output
Measuring Instrument	Distortion meter
Specified Value	Less than 0.5%

Checking method :
1) Record the signal.
2) Play back the recorded section.
3) Distortion should be less than 1.0%.

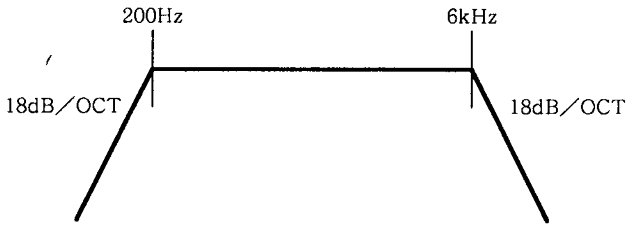


Fig. 9-26. Distortion measuring filter

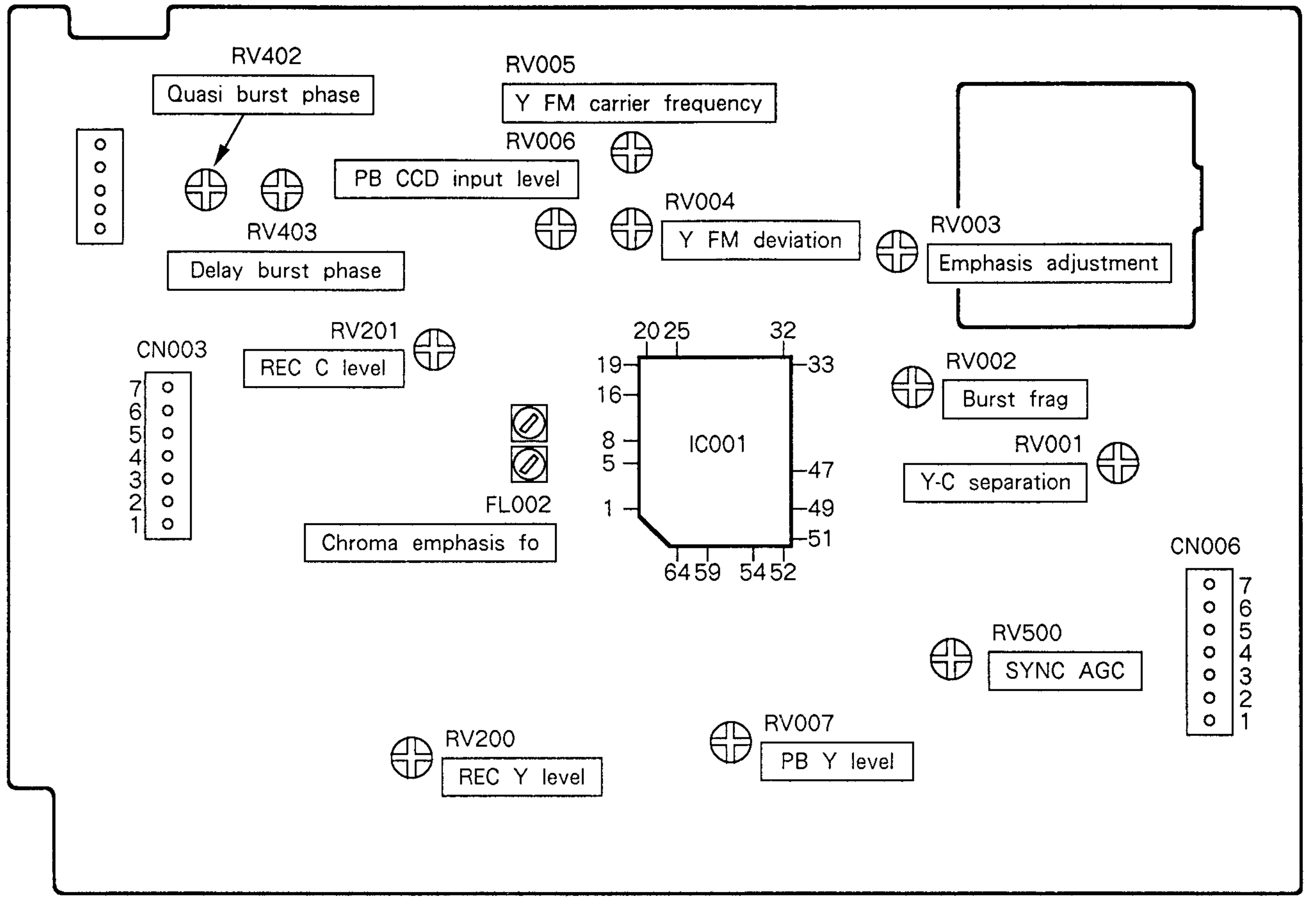
7. Overall Noise Level Check

Mode	Self-recording and playback
Signal	Non-signal Plug in shorting plugs to Audio input
Measurement Point	Audio output
Measuring Instrument	Audio level meter
Specified Value	Less than −67.5dBs＊

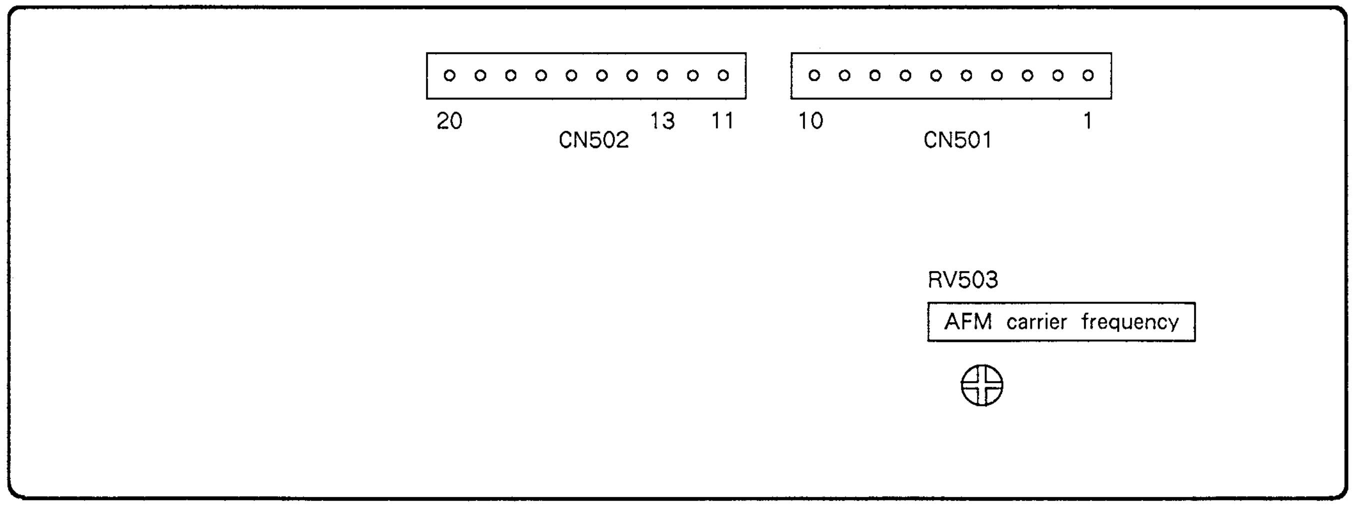
Checking method :
1) Record the signal.
2) Play back the recorded section.
3) Noise level should be less than −67.5dBs.＊
＊ This is the value when an IHF-A hearing sensitivity correction filter is used.

9-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

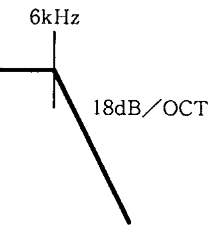
VI-101 BOARD (COMPONENT SIDE)


RV402
Quasi burst phase
RV005
Y FM carrier frequency
RV006
PB CCD input level
RV403
Delay burst phase
RV004
Y FM deviation
RV003
Emphasis adjustment
CN003
RV201
REC C level
IC001
RV002
Burst frag
RV001
Y-C separation
FL002
Chroma emphasis fo
CN006
RV500
SYNC AGC
RV200
REC Y level
RV007
PB Y level

AF-20 BOARD (COMPONENT SIDE)


20
13
11
CN502
10
1
CN501
RV503
AFM carrier frequency

n.
1.0%.



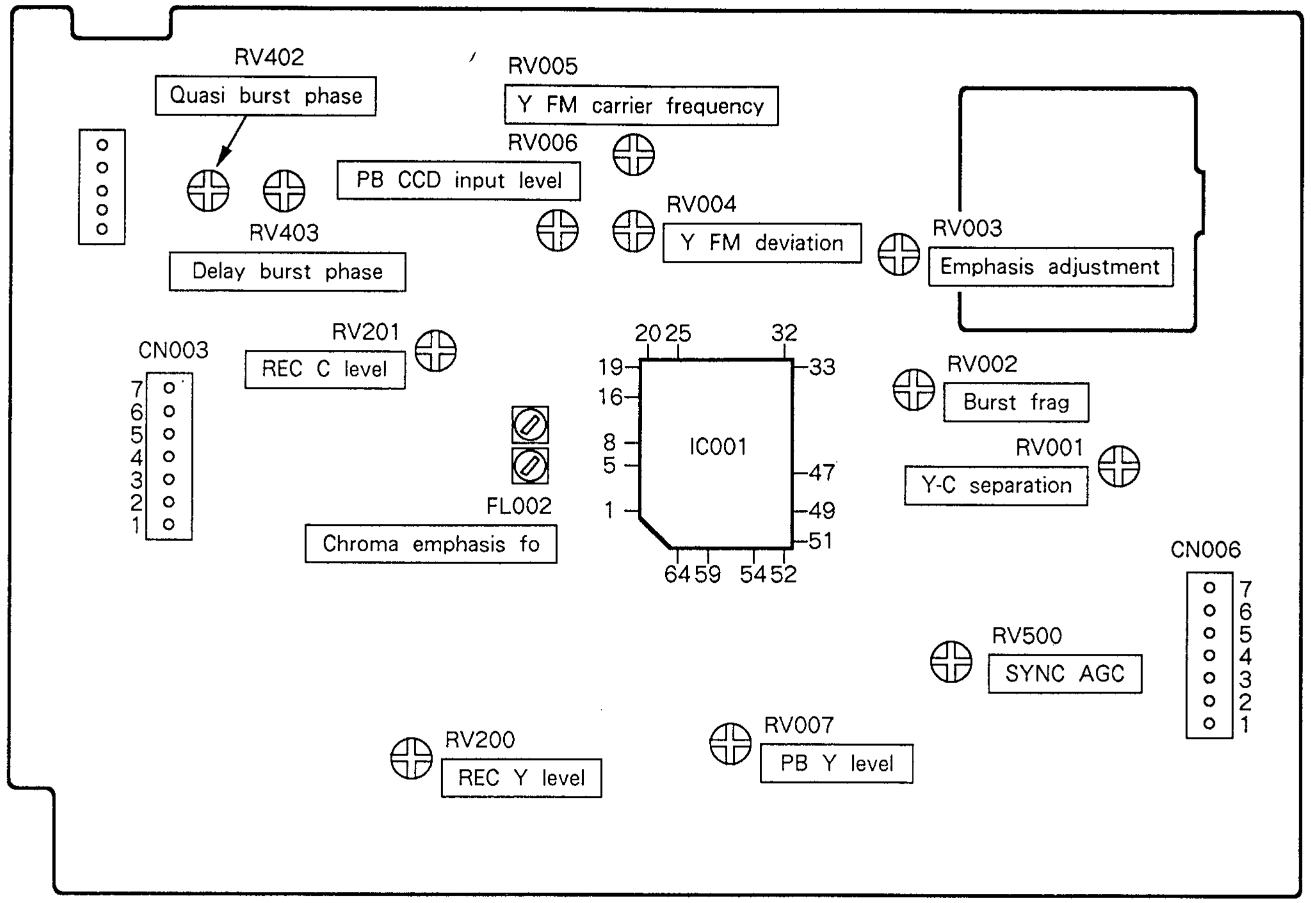
uring filter

g and playback
rting plugs to t
ut
meter
−67.5dBs *

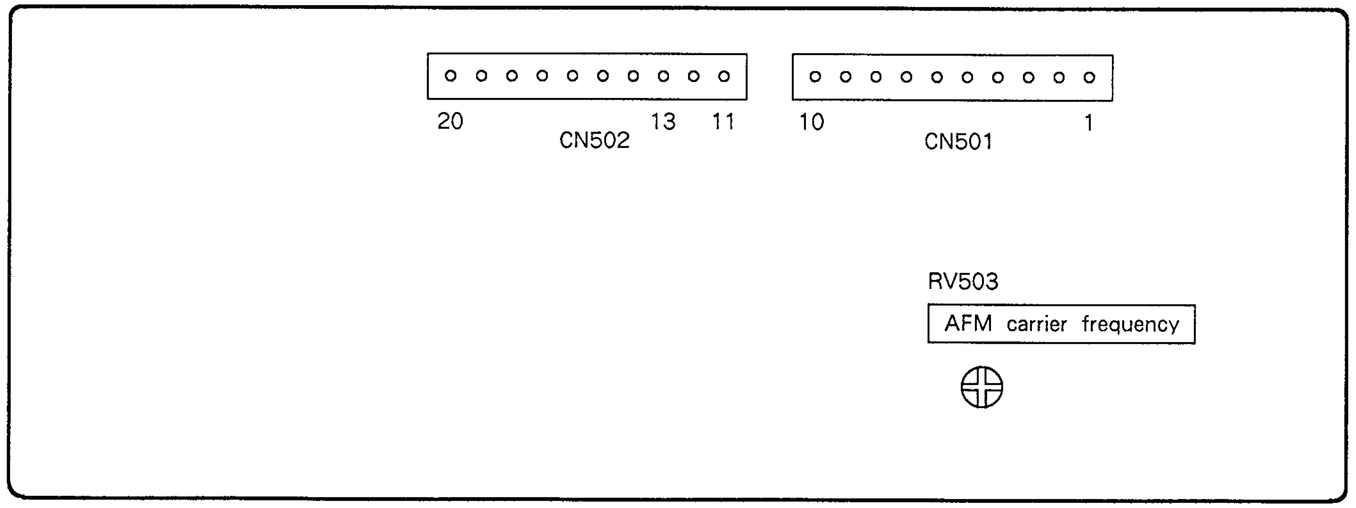
.
n −67.5dBs. *
. hearing sensitivity

9-7. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

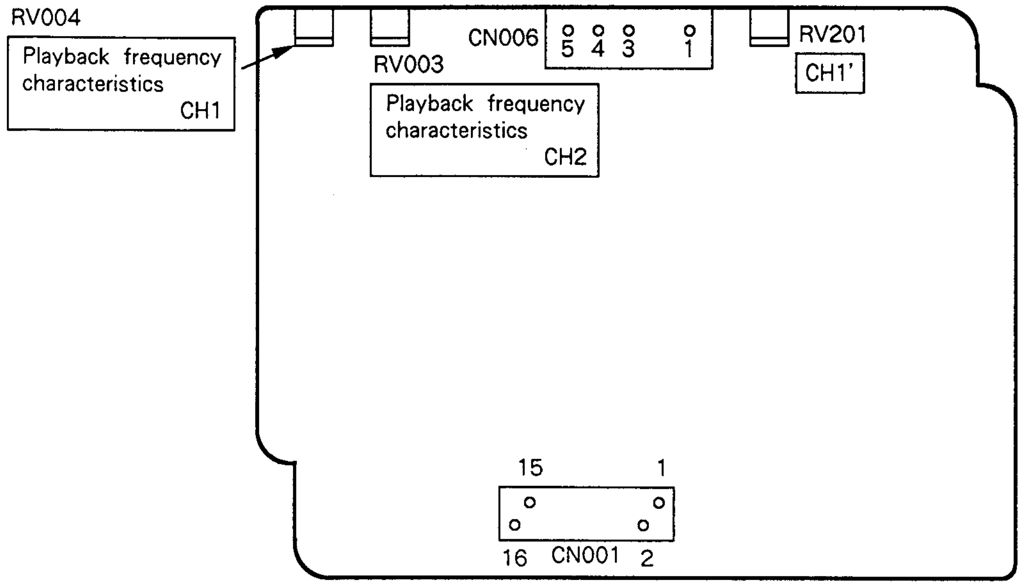
VI-101 BOARD (COMPONENT SIDE)


RV402
Quasi burst phase
RV403
Delay burst phase
RV005
Y FM carrier frequency
RV006
PB CCD input level
RV004
Y FM deviation
RV003
Emphasis adjustment
CN003
7 6 5 4 3 2 1
RV201
REC C level
IC001
20 25 32
19 16 8 5 1
33 47 49 51
64 59 54 52
FL002
Chroma emphasis fo
RV002
Burst frag
RV001
Y-C separation
CN006
7 6 5 4 3 2 1
RV500
SYNC AGC
RV200
REC Y level
RV007
PB Y level

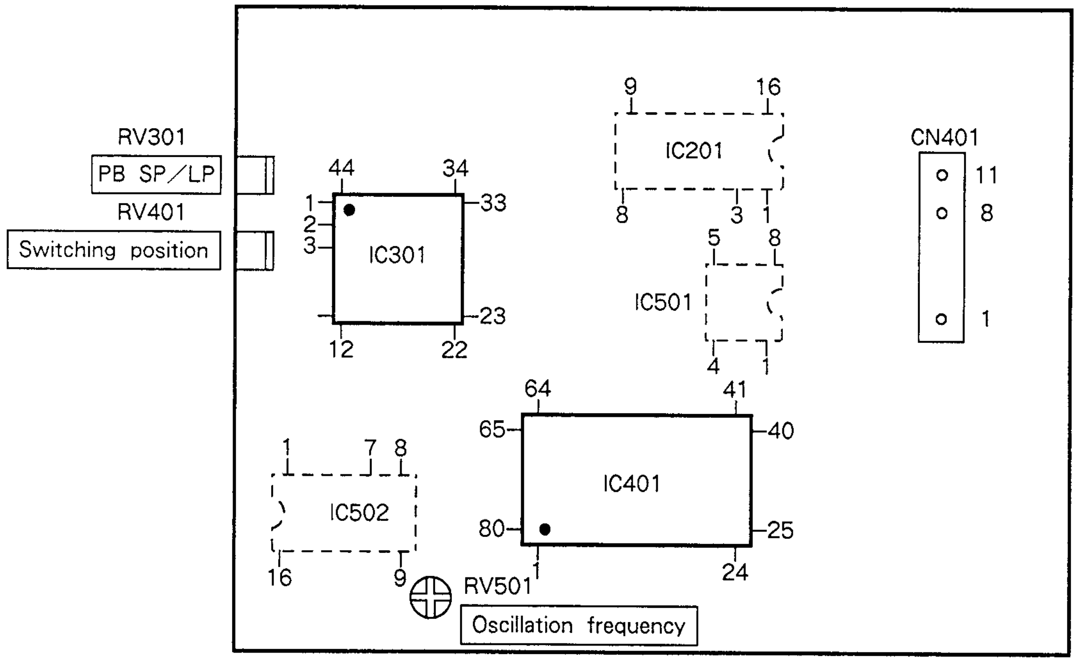
AF-20 BOARD (COMPONENT SIDE)


20
13 11
CN502
10
1
CN501
RV503
AFM carrier frequency

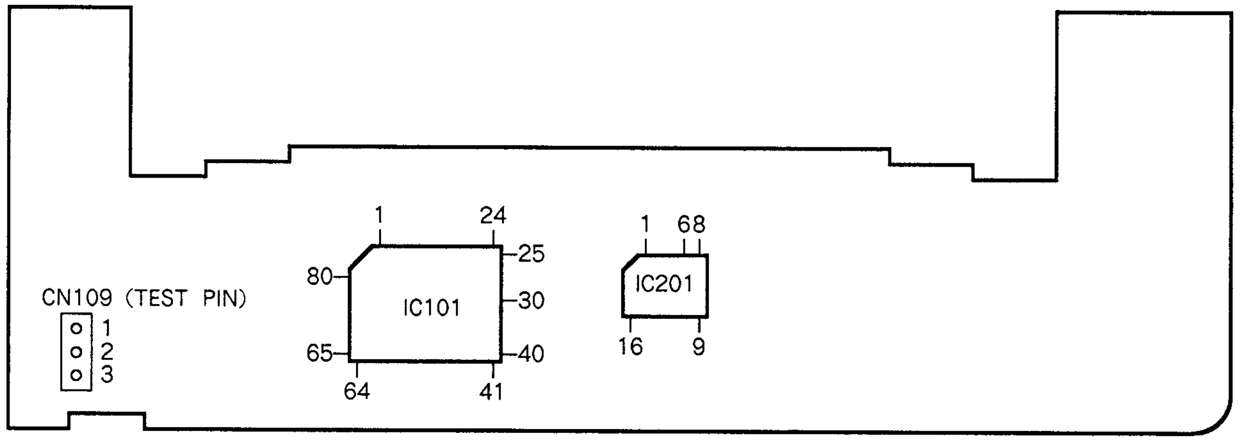
RP-69 BOARD (COMPONENT SIDE)


RV004
Playback frequency characteristics CH1
CN006
5 4 3 1
RV003
Playback frequency characteristics CH2
RV201
CH1'
15 1
16 CN001 2

CM-13 BOARD (COMPONENT SIDE)


RV301
PB SP/LP
RV401
Switching position
44 34
1 2 3
33
IC301
23
12 22
9 16
IC201
8 3 1
5 8
IC501
4 1
CN401
11
8
1
64 41
65
40
IC401
80
25
1 24
1 7 8
IC502
16 9
RV501
Oscillation frequency

FR-38 BOARD (COMPONENT SIDE)

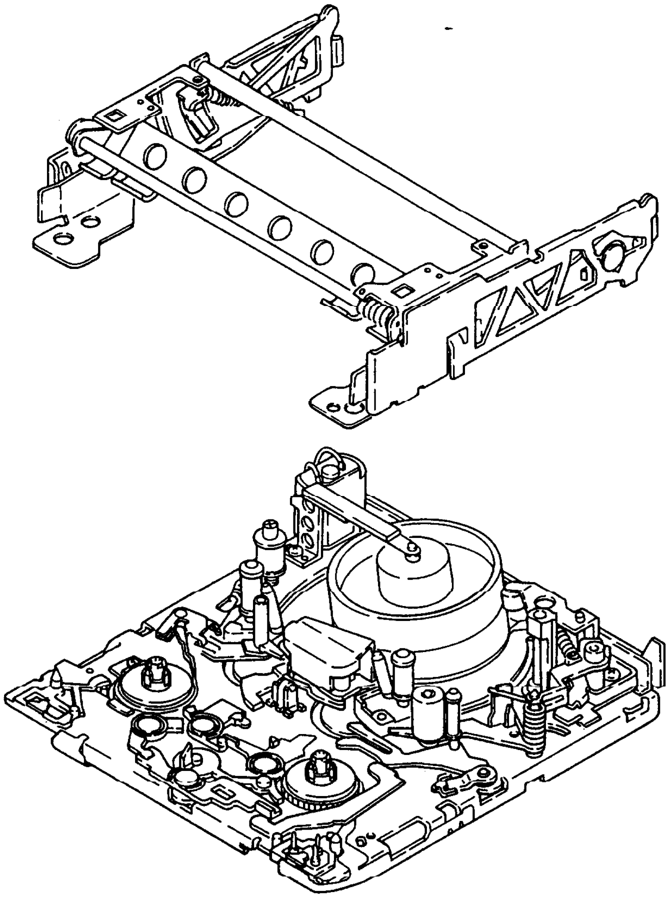

CN109 (TEST PIN)
1
2
3
1 24
80
25
IC101
30
65
40
64 41
1 68
IC201
16 9

mm Video MECHANICAL ADJUSTMENT MANUAL III

U MECHANISM

Video 8

Please use in conjunction with the SERVICE MANUAL.



8 MECHANISM DECK

SONY®

TABLE OF CONTENTS

Section Title Page

1. PREPARATIONS FOR MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

1-1. Operation without Cassette Compartment Assembly and Tape 3
  1-1-1. How to Trigger the Loading Operation 3
  1-1-2. Setting the Playback Mode 3
  1-1-3. Eject Operation 3
1-2. The Mode Selector 4
  1-2-1. Name of Each Part (external) 4
  1-2-2. Connections 4
  1-2-3. Handling 4

2. PERIODICAL CHECK AND MAINTENANCE

2-1. Rotary Drum Assembly Cleaning 5
2-2. Tape Path Cleaning 5
2-3. Drive System Cleaning 5
2-4. Periodical Check Items 6
2-5. Servicing Tools 7

3. MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

3-1. HC Roller Assembly 8
3-2. Guide Guard Assembly 8
3-3. DC Motor (Capstan Motor) Assembly 9
3-4. S Brake, T Brake 10
3-5. LB Brake, Axle Holding Pins 11
3-6. LB Release Arm 12
3-7. RK Stopper, RK Stopper Arms 12
3-8. Pinch Arm Assembly, TG-7 Assembly 13
3-9. TG-2 Assembly 14
3-10. S Reel Table Assembly, T Reel Table Assembly 15
3-11. Tension Regulator Band Assembly, Tension Regulator Arm Assembly 16
3-12. Tension Regulator FWD Position Preset 17
3-13. Drum Assembly, Dew Sensor 18
3-14. Eject Lever, Switch Lever Assembly, Pinch Roller Sub Arm Assembly 19
3-15. Timing Belt (L), RC Gear Assembly, Loading Lever Assembly, Timing Belt (S), Connecting Gear Assembly 20
3-16. Idler Pulley, TS Brake Assembly, LB Gear Assembly, RK Gear Assembly 21
3-17. UL Gear, UL Brake, UL Arm, LB Plate Spring 22
3-18. Coaster (Right) Assembly, Drive Gear (Right) Assembly 23
3-19. Coaster (Left) Assembly, Drive Gear (Left) Assembly 24
3-20. Loading Motor, Brake Release Arm, Wheel Gear, Worm Assembly 25
3-21. Rotary Upper Drum Replacement 26
3-22. FWD Back Tension 27
3-23. Reel Torque Check 27

Section Title Page

4. TAPE PATH ADJUSTMENT

4-1. Track Shift Mode Setting 28
4-2. Preparations for Adjustment 29
4-3. Tracking Adjustment 30
4-4. Tracking Fine Adjustment 30
4-5. No.2 Guide (TG-2) Adjustment 30
  4-5-1. No.2 Guide (TG-2) Height Presetting 30
  4-5-2. No.2 Guide (TG-2) Adjustment 31
4-6. No.7 Guide (TG-7) Adjustment 31
4-7. Cue and REV Waveform Check 31
4-8. Check After Adjustment 32
  4-8-1. Tracking Check 32
  4-8-2. Rising Check 32
  4-8-3. Tape Path Check 32

1. PREPARATIONS FOR MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Note: For removal of the cabinet, the boards, the cassette compartment, etc., refer to the service guides.

1-1. OPERATION WITHOUT CASSETTE COMPARTMENT ASSEMBLY AND TAPE

Note: The unit will not work if exposed to a strong light.

1-1-1. How to Trigger the Loading Operation (See Fig. 1-1.)

1) Supply power to the unit after removing the cabinet, the camera block, the cassette compartment assembly, etc., as indicated in the service guides. (This will enable operation of the mechanical deck.)
2) Cover the LED assembly with an opaque cap, etc. ❶.
3) Attach a piece of tape to the RECOG switch ❷ so that the pin is held down.
4) Push the EJECT lever ❸ in the direction of the arrow Ⓐ.

1-1-2. Setting the Playback Mode (See Fig. 1-1.)

1) Follow the procedures in section 1-1-1. above.
2) Put the rubber band ❹ around the S and T reels.
3) Press the PLAY switch of unit, then push the tension regulator arm assembly ❺ in the direction of the arrow Ⓑ when the T reel starts to rotate (the tension regulator band will be released, and the S reel will start rotating).
4) To stop operation, press the STOP switch.

1-1-3. Eject Operation (See Fig. 1-1.)

1) To eject, turn the EJECT switch on.

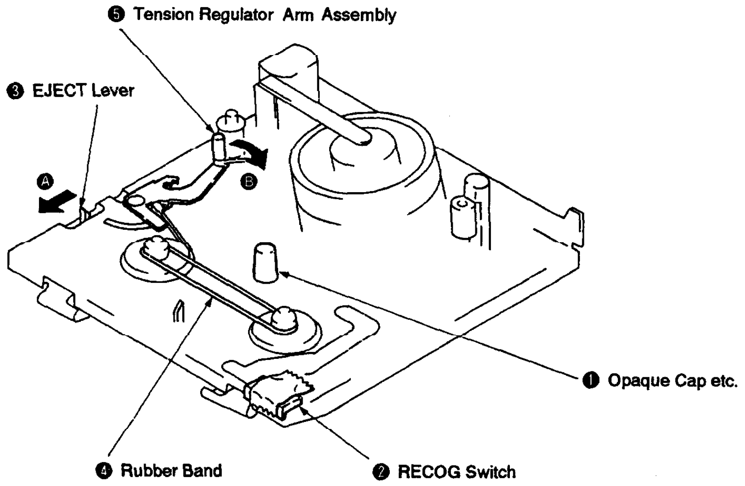


Fig. 1-1.

1-2. THE MODE SELECTOR

1-2-1. Name of Each Part (external) (See Fig. 1-2.)

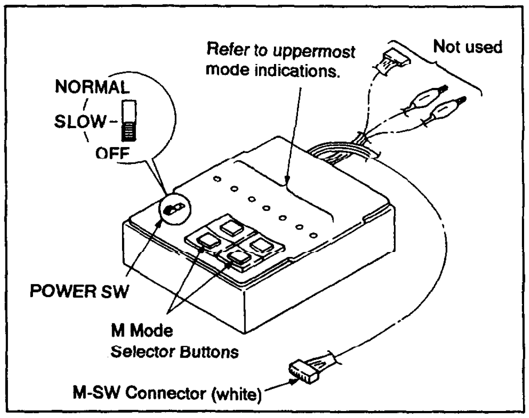

Refer to uppermost mode indications.
Not used
NORMAL
SLOW
OFF
POWER SW
M Mode Selector Buttons
M-SW Connector (white)

Fig. 1-2.

1-2-2. Connections (See Fig. 1-3.)

1) Mount the MODE SELECTOR III panel (Ref. No. J-9) ❶ onto the mode selector.
2) Attach the conversion connector (Ref. No. J-8) ❸ of MODE SELECTOR III to the 6-pin connector (white) ❷ of the mode selector M-SW.
3) Remove the FP-89 flexible board ❺ from the flexible connector ❹.
4) Attach the FP-89 flexible board ❺ to the flexible connector ❻ of the MODE SELECTOR III conversion connector ❸, then attach the 2-pin connector (white) ❽ of the loading motor to the 2-pin connector (white) ❼.

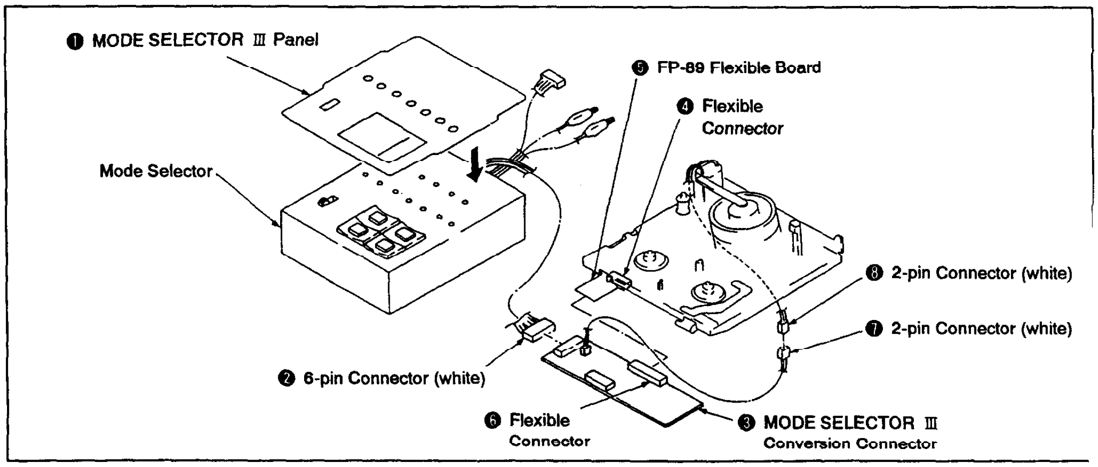

❶ MODE SELECTOR Ⅲ Panel
Mode Selector
❺ FP-89 Flexible Board
❹ Flexible Connector
❽ 2-pin Connector (white)
❼ 2-pin Connector (white)
❷ 6-pin Connector (white)
❻ Flexible Connector
❸ MODE SELECTOR Ⅲ Conversion Connector

Fig. 1-3.

1-2-3. Handling (See Figs. 1-2. and 1-4.)

- Use only the M mode selector buttons.
- Refer to mode indications on the uppermost part of the MODE SELECTOR III panel.
- If the right M mode selector button is kept pressed, the lit indication will change in the order of EJECT → (IA) → ULD → (IB) → STOP → (IC) → FWD.
- To change modes in the reverse direction (from FWD to EJECT), press the left selector button.

Note: For this U mechanism, the uppermost indicators on the MODE SELECTOR III panel are used. The IA, IB and IC indications light up during mode changes.

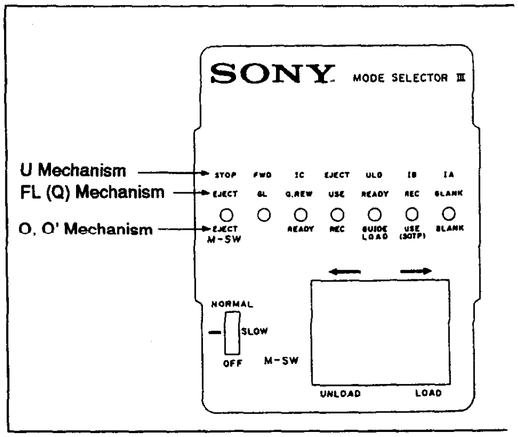

SONY MODE SELECTOR Ⅲ
U Mechanism
FL (Q) Mechanism
O, O' Mechanism
STOP
FWD
IC
EJECT
ULD
IB
IA
EJECT
QL
Q.REW
USE
READY
REC
BLANK
EJECT
M-SW
READY
REC
GUIDE LOAD
USE (SOTP)
BLANK
NORMAL
SLOW
OFF
M-SW
UNLOAD
LOAD

Fig. 1-4.

2. PERIODICAL CHECK AND MAINTENANCE (See Fig. 2-1.)

The following periodical check and maintenance procedures are necessary to ensure proper operation and to protect the tapes as well as the unit, and the following maintenance procedures must be always carried out after repairing regardless of how long the unit has been used.

2-1. ROTARY DRUM ASSEMBLY CLEANING

1) While pressing a piece of chamois leather (Ref. No. J-2) moistened in cleaning fluid (Ref. No. J-1) lightly against the rotary drum, turn the rotary upper drum slowly counter-clockwise with your fingers.

Note: Do not drive the drum with the motor, and do not turn it clockwise.
Do not move the chamois leather vertically against the head tip; this can damage the head tip. Strictly follow the cleaning instructions above.

2-2. TAPE PATH CLEANING

1) Set the cassette compartment assembly to the eject state, or remove it. Then clean the tape path (guides No. 1 to 7, capstan shaft, pinch rollers) with a piece of chamois leather moistened in cleaning fluid (See Fig. 2-1).

2-3. DRIVE SYSTEM CLEANING

1) Clean the drive system (timing belt, reel table surface) with a piece of cloth moistened in cleaning fluid.

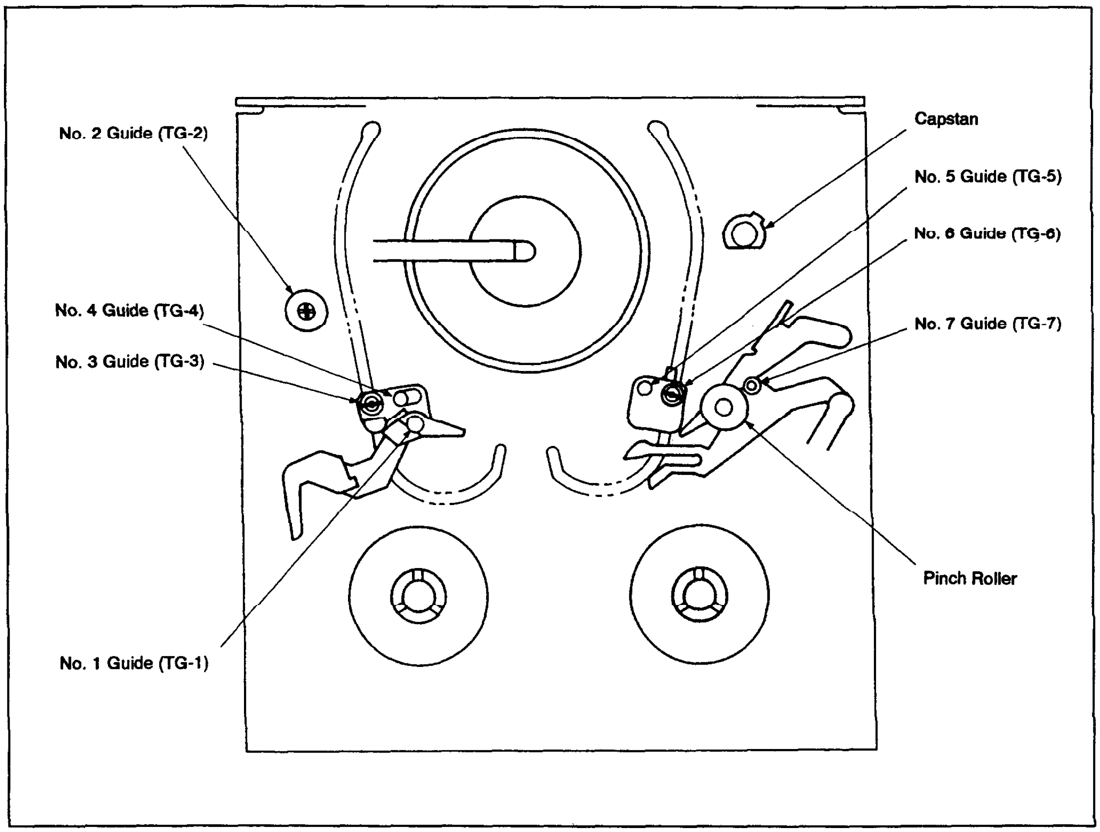


Fig. 2-1.

2-4. PERIODICAL CHECK ITEMS

○Cleaning ◎Lubrication ☆Check

Maintenance and Check Item		Operation time (H)										Remarks
		500	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	
Cleaning and Demag-netizing	Tape path surfaces Cleaning	○	○	○	○	○	○	○	○	○	○	Do not oil.
	Rotary drum assembly cleaning and demagnetizing	○	○	○	○	○	○	○	○	○	○	Do not oil.
Drive System	Relay belt (short)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-866-01
	Relay belt (long)	–	☆	–	☆	–	☆	–	☆	–	☆	3-728-865-01
	Capstan shaft	–	◎	–	◎	–	◎	–	◎	–	◎	Take care that no oil gets on tape path surfaces.
	Idler pulley axle	–	◎	–	◎	–	◎	–	◎	–	◎	
	Loading motor	–	☆	–	☆	–	☆	–	☆	–	☆	1-541-612-11
Perfor-mance Check	Abnormal noise	☆	☆	☆	☆	☆	☆	☆	☆	☆	☆	
	Back tension measurement	–	☆	–	☆	–	☆	–	☆	–	☆	
	Brake system	–	☆	–	☆	–	☆	–	☆	–	☆	
	FWD, RVS torque measurement	–	☆	–	☆	–	☆	–	☆	–	☆	

Notes: When overhauling the unit, perform parts replacement referring to the table above.

Regarding Oil:

- Always use the specified oil (using oil of different viscosity, etc. can cause troubles of several kinds).
  Specified oil: Part No. 7-661-018-01
  (Mitsubishi Diamond Oil Hydrofluid EP56)
- Be sure that no dirt is mixed in the oil to be used on axle bearings. Use of dirty oil can result in bearing wear and burning.
- By "one drop of oil" is meant the quantity of oil adhering to the end of a a 2mm-diameter rod as shown in Fig. 2-2.

On grease:

- Use the specified grease.
  Grease: Part No. 7-662-010-08
  (Sony grease SGL-701)

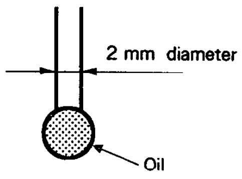


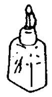
Fig. 2-2.

2-5. SERVICING TOOLS

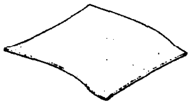
Ref. No.	Name	Part Code	Marking	Application, etc.
J-1	Cleaning fluid	Y-2031-001-0	–	
J-2	Chamois cloth	2-034-697-00	–	
J-3	Head demagnetizer	Commercially available	–	
J-4	Dental mirror Spare mirror	J-6080-029-A J-6080-030-1	SL-5052	Tape path
J-5	Alignment tape NTSC (WR5-1N) PAL (WR5-1C)	8-967-995-01 8-967-995-06		Tape path
J-6	FWD/RVS takeup torque cassette	J-6080-624-A	GD-2086	
J-7	Rotary drum jig	(Attached to the maintenance rotary upper drum)		
J-8	Mode selector III conversion connector	J-6082-021-A		General
J-9	Mode selector III panel	J-6082-023-A		General
J-10	Mode selector	J-6080-825-A		General
J-11	Hexagonal wrench detection (0.89 mm) or L wrench (0.89 mm)	7-700-766-01 7-700-736-06		Tape path
J-12	Sony grease (SGL-701)	7-662-010-08		

Other devices: Oscilloscope
Analog tester (20 kΩ)

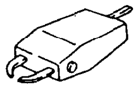
J-1



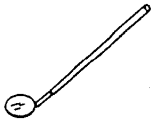
J-2



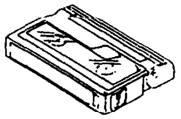
J-3



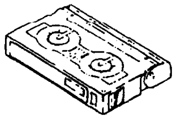
J-4



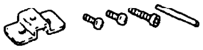
J-5



J-6

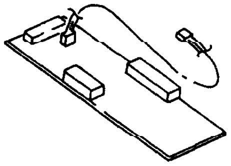


J-7

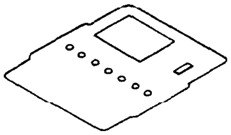


(Attached to the maintenance rotary upper drum)

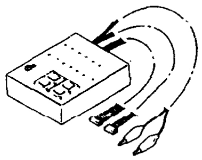
J-8



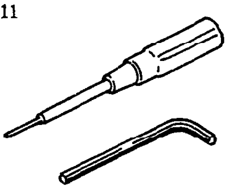
J-9



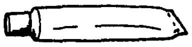
J-10



J-11



J-12



3. MECHANICAL BLOCK CHECK, ADJUSTMENT AND REPLACEMENT

Notes:
- Use the mode selector (Ref. No. J-10) for procedures in this chapter.
- Modes within a frame ☐ are those set by pressing the buttons of the mode selector.

3-1. HC ROLLER ASSEMBLY

1. Removal (See Fig. 3-1.)

1) Remove the screw ❶, then remove the HC roller assembly ❷.

2. Installation (See Fig. 3-1.)

1) Align the two dowels ❸ attached to the HC roller assembly ❷ with the two holes ❹ in the mechanism chassis.
2) Secure the HC roller assembly ❷ with the screw ❶.

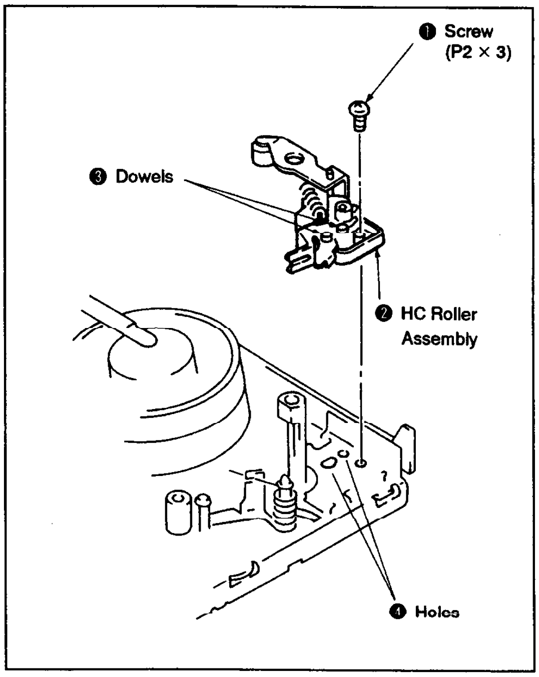

❶ Screw (P2 × 3)
❸ Dowels
❷ HC Roller Assembly
❹ Holes

Fig. 3-1.

3-2. GUIDE GUARD ASSEMBLY

1. Removal (See Fig. 3-2.)

Remove the screw ❶, then remove the guide guard assembly ❷.

2. Installation (See Fig. 3-2.)

1) Align the dowel ❸ attached to the guide guard assembly ❷ with the hole ❹.
2) Secure the guide guard assembly ❷ with the screw ❶.

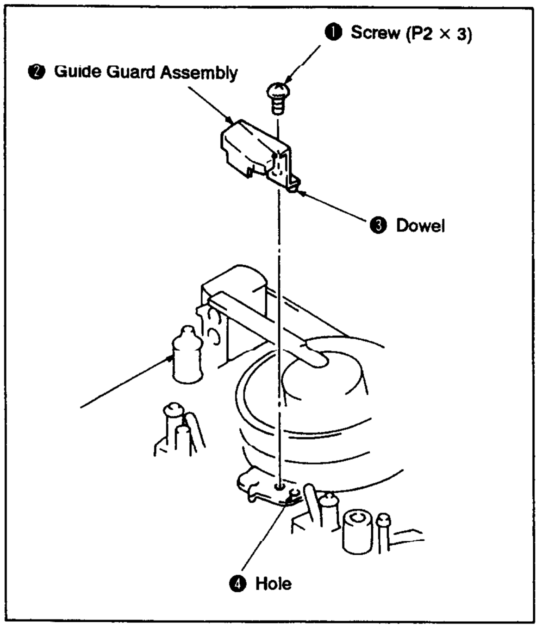

❶ Screw (P2 × 3)
❷ Guide Guard Assembly
❸ Dowel
❹ Hole

Fig. 3-2.

3-3. DC MOTOR (CAPSTAN MOTOR) ASSEMBLY

1. Removal (See Fig. 3-3.)

1) Set the ULD mode.
2) Turn the stopper ❶ in the direction of the arrow 🅐 as far as it will go.
3) Remove the two screws ❷, then remove the DC motor ❸.

2. Installation (See Fig. 3-3.)

1) Align the two screwed dowels ❹ with the two holes ❺, then engage the toothed part ❻ with the connecting gear ❼.
2) Secure the DC motor assembly ❸ with the two screws ❷.
3) Turn the stopper ❶ in the direction of the arrow 🅑 as far as it will go.

Note:
- When engaging the gears, take care not to damage their teeth.
- Do not leave any clearance between the DC motor ❸ and the chassis.
- Do not touch the capstan motor axle*, the oil seal* and the rotor*.

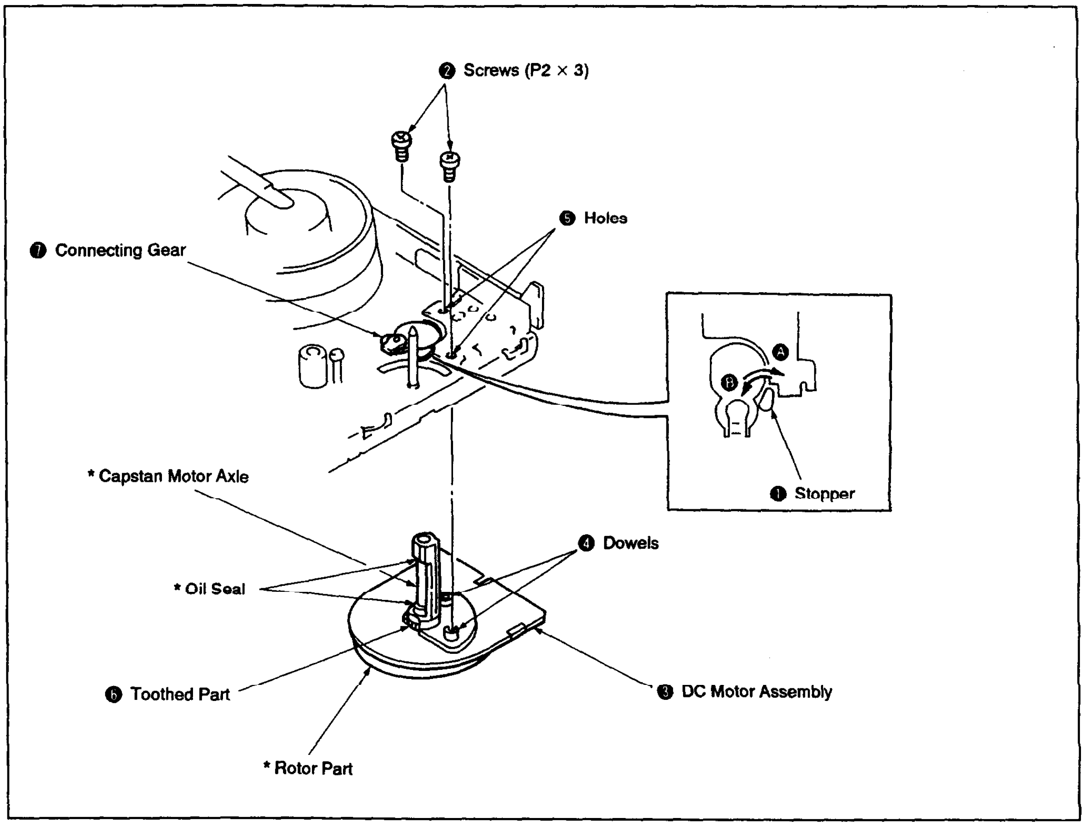

❷ Screws (P2 × 3)
❺ Holes
❼ Connecting Gear
🅐
🅑
❶ Stopper
* Capstan Motor Axle
❹ Dowels
* Oil Seal
❻ Toothed Part
❸ DC Motor Assembly
* Rotor Part

Fig. 3-3.

3-4. S BRAKE, T BRAKE

1. Removal (See Fig. 3-4.)

1) Remove the torsion coil spring (ST) ❶.
2) Remove the axle holding pin ❷, then remove the T brake ❸.
3) Remove the axle holding pin ❹, then remove the S brake ❺.

2. Installation (See Fig. 3-4.)

1) While fitting the toothed part ❻ into the notch ❼, mount the S brake ❺.
2) Insert the axle holding pin ❹.
3) Insert the axle ❽ to the S reel side of the brake release arm ❾ so that the Ⓐ part comes closer to the drum than part Ⓑ, and mount the T brake ❸.
4) Insert the axle holding pin ❷.
5) Insert the torsion coil spring (ST) ❶ below the claw ⓫ of the axle ❿, then hook it to two claws ⓬.

Note: Confirm that the claws of axle holding pins ❷ and ❹ are not broken before assembling.

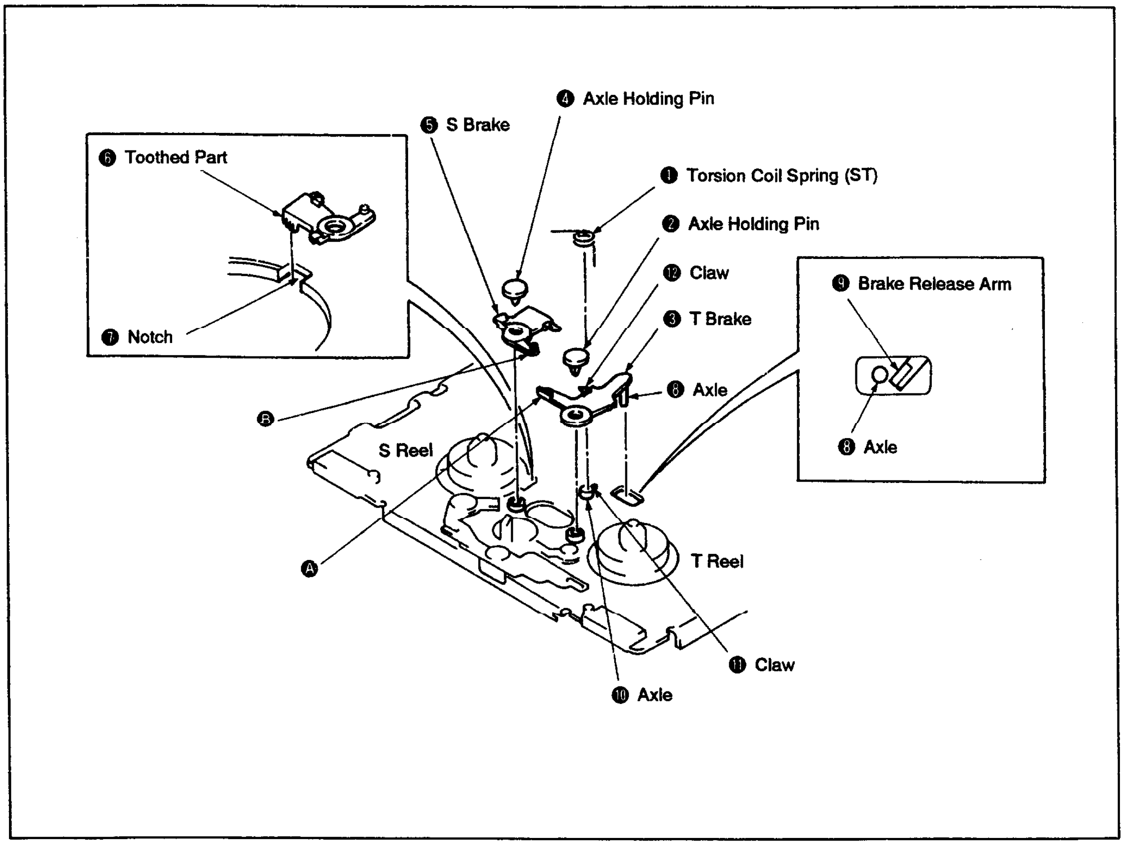

❹ Axle Holding Pin
❺ S Brake
❻ Toothed Part
❼ Notch
❶ Torsion Coil Spring (ST)
❷ Axle Holding Pin
⓬ Claw
❸ T Brake
❾ Brake Release Arm
❽ Axle
Ⓑ
S Reel
❽ Axle
Ⓐ
T Reel
⓫ Claw
❿ Axle

Fig. 3-4.

3-5. LB BRAKE, AXLE HOLDING PINS

1. Removal (See Fig. 3-5.)

1) Remove the screw ❶, then remove the TL holding plate ❷.
2) Remove the axle holding pin ❸, then remove the LB brake ❹.
3) Remove the axle holding pin ❺, then remove the LB lever ❻.

2. Installation (See Fig. 3-5.)

1) Mount the LB lever ❻ matching it to pin ❼ of the LB gear, then secure it with the axle holding pin ❺.
2) Insert the pin ❽ into the notch ❾ of the LB lever ❻, then mount the LB brake ❹ while inserting the toothed part ❿ into the notch ⓫.
3) Insert the axle holding pin ❸.
4) Align the dowel ⓬ with the hole ⓭, then mount the TL holding plate and secure it with the screw ❶.

Note: Confirm that the claws of axle holding pins ❸ and ❺ are not broken before assembling.

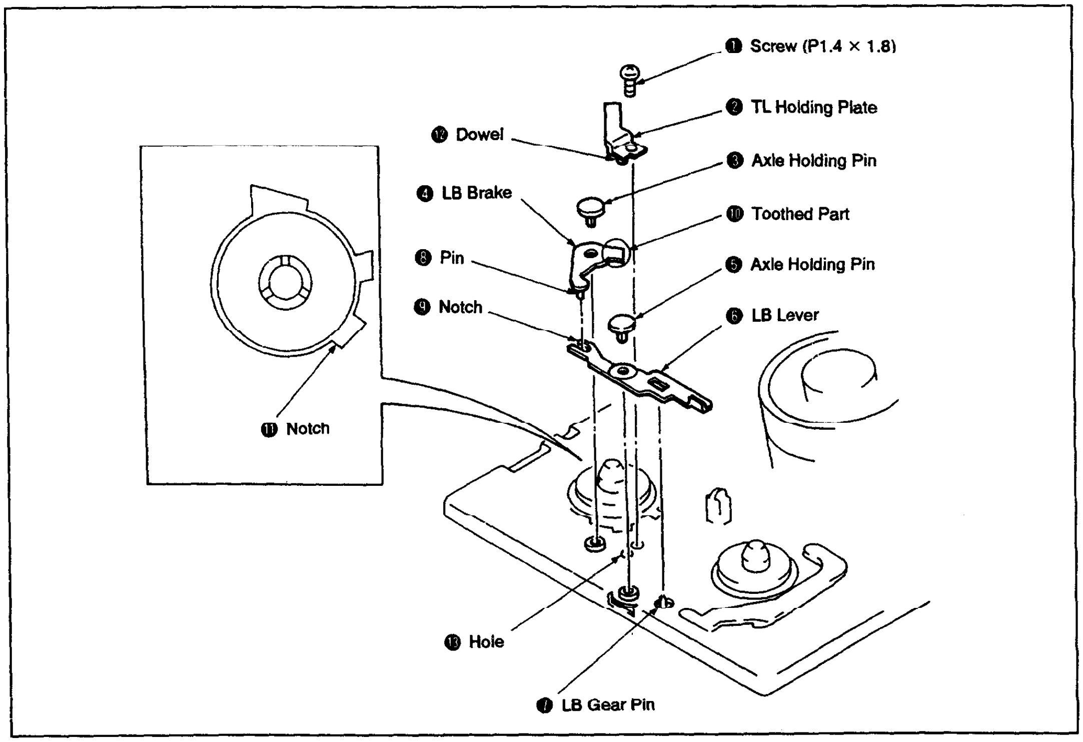

❶ Screw (P1.4 × 1.8)
⓬ Dowel
❷ TL Holding Plate
❸ Axle Holding Pin
❹ LB Brake
❿ Toothed Part
❽ Pin
❺ Axle Holding Pin
❾ Notch
❻ LB Lever
⓫ Notch
⓭ Hole
❼ LB Gear Pin

Fig. 3-5.

3-6. LB RELEASE ARM

1. Removal (See Fig. 3-6.)

1) While pushing the claw ❶ in the direction of the arrow, remove the LB release arm ❷.

2. Installation (See Fig. 3-6.)

1) Fit the LB release arm ❷ to the axle ❸, insert protrusions ⓐ, ⓑ, ⓒ, ⓓ into the three holes ❹, then secure with the claw ❶.

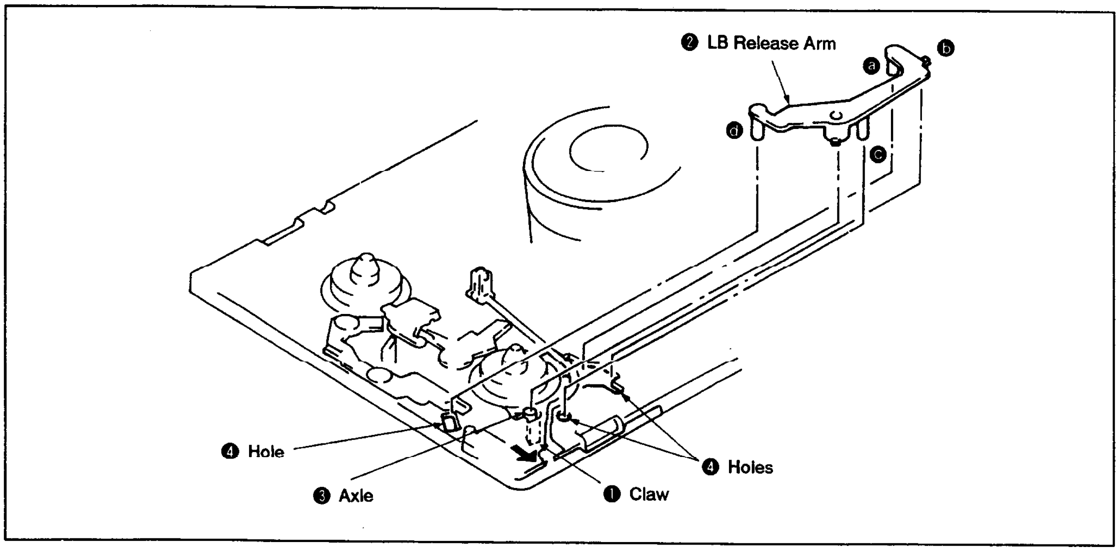

❷ LB Release Arm
ⓐ
ⓑ
ⓓ
ⓒ
❹ Hole
❸ Axle
❶ Claw
❹ Holes

Fig. 3-6.

3-7. RK STOPPER, RK STOPPER ARMS

1. Removal (See Fig, 3-7.)

1) Remove the torsion coil spring (RK) ❶.
2) Open the chassis claw ❷, then remove the RK stopper arm ❸.
3) Remove the RK stopper ❹.

2. Installation (See Fig. 3-7.)

1) Mount the RK stopper ❹ onto the axle ❺.
2) Mount the RK stopper arm ❸ onto the axle ❻, insert Pin ❿ into hole ⓫, then hook the claw ❷ of the chassis to the hole ❼.
3) Insert the torsion coil spring (RK) ❶ into the axle ❺, then hook it to claws ❽ and ❾.

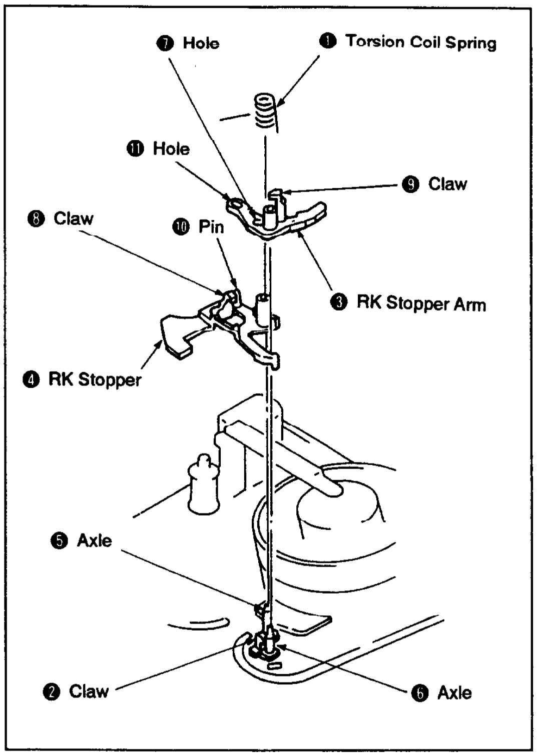

❼ Hole
❶ Torsion Coil Spring
⓫ Hole
❾ Claw
❽ Claw
❿ Pin
❸ RK Stopper Arm
❹ RK Stopper
❺ Axle
❷ Claw
❻ Axle

Fig. 3-7.

3-8. PINCH ARM ASSEMBLY, TG-7 ASSEMBLY

1. Removal (See Fig. 3-8.)

1) Set the $\boxed{\text{IB}}$ mode.
2) Remove the stopper washer ❶, then remove the pinch arm assembly ❷.
3) Bend the claw ❹ inside hole ❸ in the direction of the arrow using a thin screwdriver or the like, then remove the TG-7 plate spring ❺.
4) Remove the TG-7 arm assembly ❻.

2. Installation (See Fig. 3-8.)

1) Grease the inner surfaces of hole ❼ (See Fig. A).
2) Insert the axle ❽ of the TG-7 arm assembly ❻ into the hole ❼.
3) Grease the shaded section ⓐ (See Fig. A).
4) Insert the TG-7 plate spring ❺ into the hole ❸, then secure it with the claw ❹.
5) Apply half a drop of oil to the axle ❾ (See Fig. B).
6) Fit the pinch arm assembly ❷ to the axle ❾ and insert the pinch roller sub arm assembly tab ❿ into the ⓑ part.
7) Install the stopper washer ❶.

Note:
- Take care not to grease the screw ⓫ of the TG-7 arm assembly ❻ (See Fig. A).
- When fitting the pinch arm assembly ❷ to the axle ❾, make sure that it does not touch the TG-7 guide ⓬ or the rubber roller ⓭.
- After assembling, be sure to perform tape path adjustment as described in section 4.

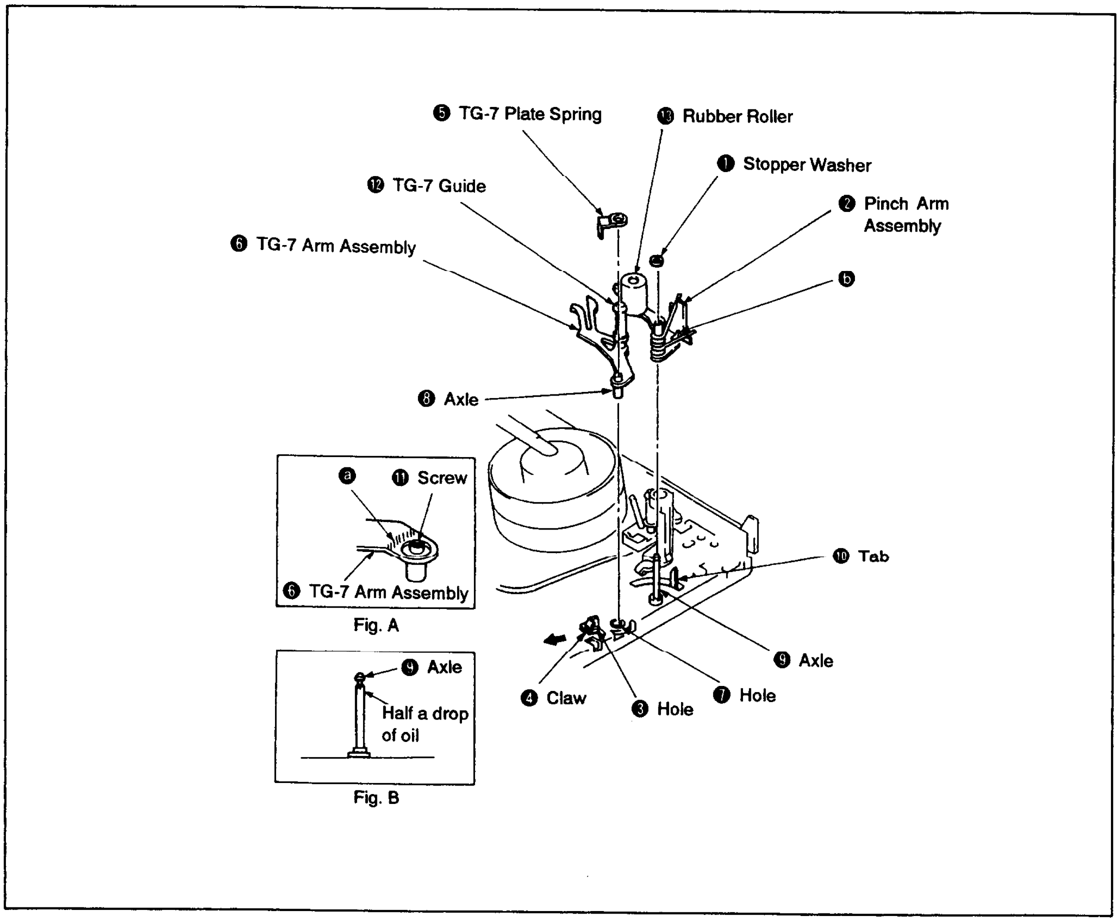

❺ TG-7 Plate Spring
⓭ Rubber Roller
❶ Stopper Washer
⓬ TG-7 Guide
❷ Pinch Arm Assembly
❻ TG-7 Arm Assembly
ⓑ
❽ Axle
ⓐ
⓫ Screw
❻ TG-7 Arm Assembly
❿ Tab
❾ Axle
Half a drop of oil
❾ Axle
❹ Claw
❸ Hole
❼ Hole

Fig. A

Fig. B

Fig. 3-8.

3-9. TG-2 ASSEMBLY

1. Removal (See Fig. 3-9.)

1) Remove the TG-2 upper flange assembly ❶.
2) Remove the TG-2 roller ❷, the TG-2 sleeve ❸, the TG-2 lower flange ❹ and the compression spring ❺.

2. Installation (See Fig. 3-9.)

1) Mount the compression spring ❺, the TG-2 lower flange ❹, the TG-2 sleeve ❸ and the TG-2 roller ❷ to the axle.
2) Secure the TG-2 upper flange ❶ to the axle by rotating it 4 to 6 turns.

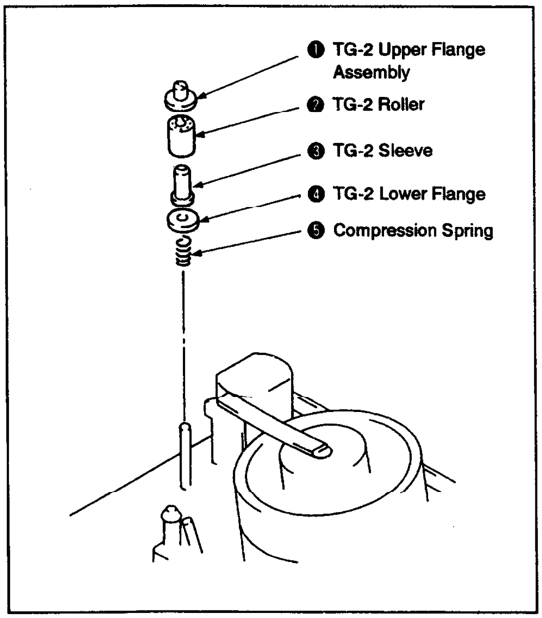

❶ TG-2 Upper Flange Assembly
❷ TG-2 Roller
❸ TG-2 Sleeve
❹ TG-2 Lower Flange
❺ Compression Spring

Fig. 3-9.

3. TG-2 Height Preset (see Fig. 3-10.)

1) Adjust height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by turning the TG-2 upper flange ❶.

Note: After adjustment, be sure to perform tape path adjustment as described in section 4.

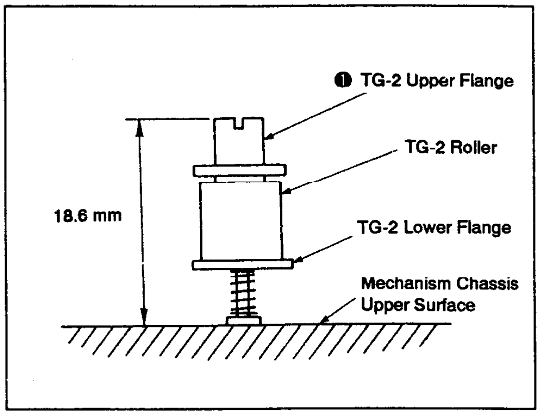

❶ TG-2 Upper Flange
TG-2 Roller
18.6 mm
TG-2 Lower Flange
Mechanism Chassis Upper Surface

Fig. 3-10.

3-10. S REEL TABLE ASSEMBLY, T REEL TABLE ASSEMBLY

1. Removal (See Fig. 3-11.)

1) Remove the S brake and T brake as described in section 3-4.
2) Remove the TL holding plate as described in section 3-5.
3) Remove the tension regulator band assembly as described in section 3-11.
4) Remove the S reel table assembly ❶.
5) Turn the stopper ❷ approx. 90 ° in the direction of the arrow Ⓐ.
6) While sliding the LB release arm ❸ in the direction of the arrow Ⓑ, remove the T reel table assembly ❹.

2. Installation (See Fig. 3-11.)

1) Apply half a drop of oil to the axle ❺ (See Fig. A).
2) Move the RK gear ❻ in the direction of the arrow Ⓒ and the TS brake ❼ in the direction of the arrow Ⓓ, putting them out of the way.
3) While sliding the LB release arm ❸ in the direction of the arrow Ⓑ, mount the T reel table assembly ❹ onto the axle ❺, then turn the stopper ❷ in the direction of the arrow Ⓔ as far as it will go.
4) Apply half a drop of oil to the axle ❽ (See Fig. B).
5) Move the RK gear ❻ in the direction of the arrow Ⓕ, the UL brake ❾ in the direction of the arrow Ⓖ and the LB brake ❿ in the direction of the arrow Ⓗ, putting them out of the way.
6) Mount the S reel table ❶ onto the axle ❽.
7) Mount the tension regulator band assembly as described in section 3-11.
8) Mount the TL holding plate as described in section 3-5.
9) Mount the S brake and T brake assemblies as described in section 3-4.

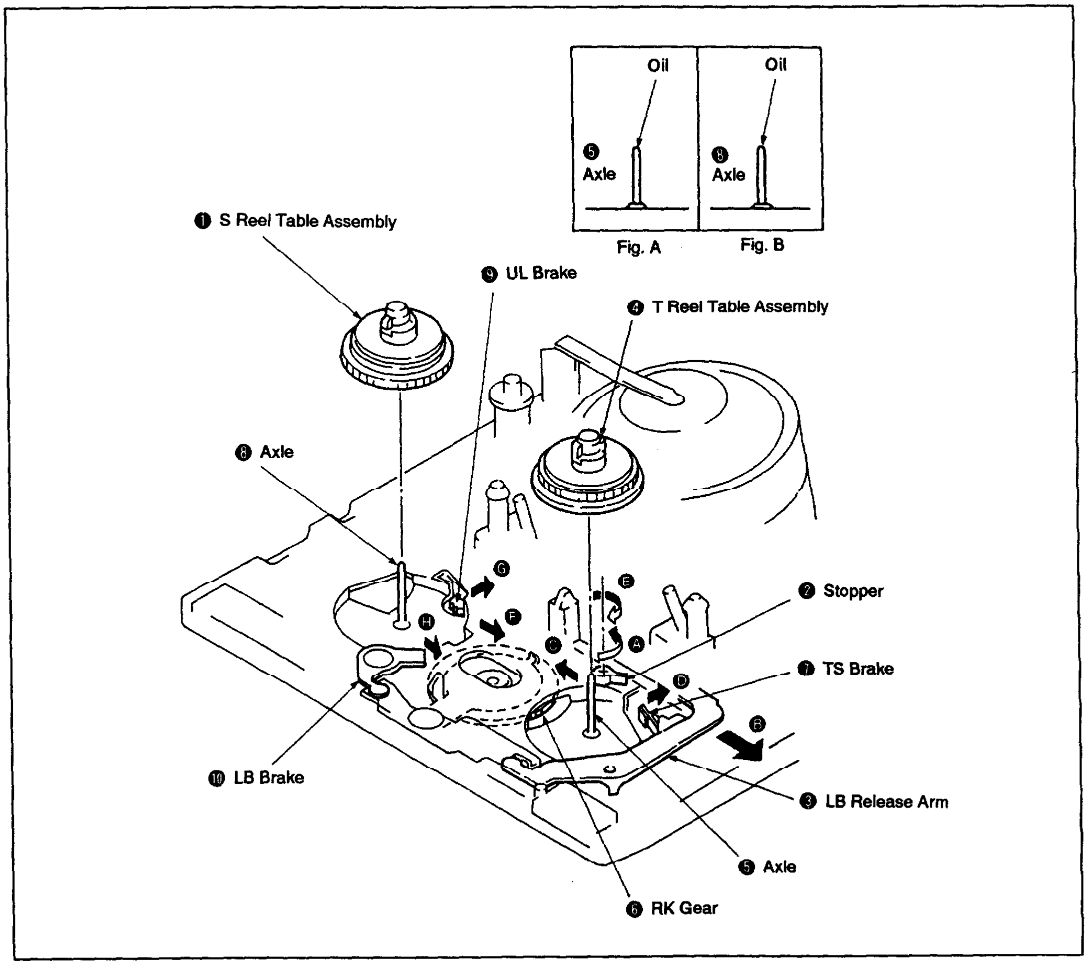

Oil
❺ Axle
Fig. A
Oil
❽ Axle
Fig. B
❶ S Reel Table Assembly
❾ UL Brake
❹ T Reel Table Assembly
❽ Axle
Ⓖ
Ⓔ
❷ Stopper
Ⓕ
Ⓗ
Ⓒ
Ⓐ
❼ TS Brake
Ⓓ
Ⓑ
❿ LB Brake
❸ LB Release Arm
❺ Axle
❻ RK Gear

Fig. 3-11.

3-11. TENSION REGULATOR BAND ASSEMBLY, TENSION REGULATOR ARM ASSEMBLY

1. Removal (See Fig. 3-12.)

1) Remove the TL holding plate as described in section 3-5.
2) Remove the screw ❶.
3) Using a thin screwdriver or the like, remove the tension regulator band assembly ❹ from the axle ❸ of tension regulator arm assembly ❷.
4) Remove the tension spring ❺.
5) Remove the stopper washer ❻ from the back of the mechanism chassis, then remove the tension regulator arm assembly ❷.
6) Open the claw ❼, then remove the adjust arm ❽.

Note: When removing the tension regulator band assembly ❹, take care not to twist or bend it, and not to touch the felt surface ❾.

2. Installation (See Fig. 3-12.)

1) Engage the adjust arm ❽ in the position shown in Fig. A, then close the claw ❼.
2) Apply half a drop of oil to the hole ❿.
3) Mount the tension regulator arm assembly ❷, then insert it into the slot ⓫ so that the ⓐ part comes to the arrow Ⓐ side of the switch lever assembly (See Fig. B).
4) While holding the tension regulator arm assembly ❷ from the mechanism chassis front, secure it with the stopper washer ❻ from the back.
5) Hook the R hook of the tension spring ❻ to the adjust arm ❽ as shown in the figure, then hook the opposite end to the tension regulator arm assembly ❷.
6) Mount the tension regulator band assembly ❹ onto the axle ❸ of tension regulator arm assembly ❷, and place it so that the felt surface ❾ comes against the shaded portion of the S reel table assembly ⓬.
7) Mount the tension regulator plate ⓭ of the tension regulator band assembly ❹ so that it is aligned with the dowel ⓮ of the mechanism chassis, then secure it temporarily with the screw ❶.
8) Mount the TL holding plate as described in section 3-5.
9) Adjust tension regulator FWD position as described in section 3-12.
10) Perform adjust arm adjustment as described in section 3-22.

Note: When mounting the tension regulator band assembly ❷, take care not to twist or bend it, and not to touch the felt surface ❾.

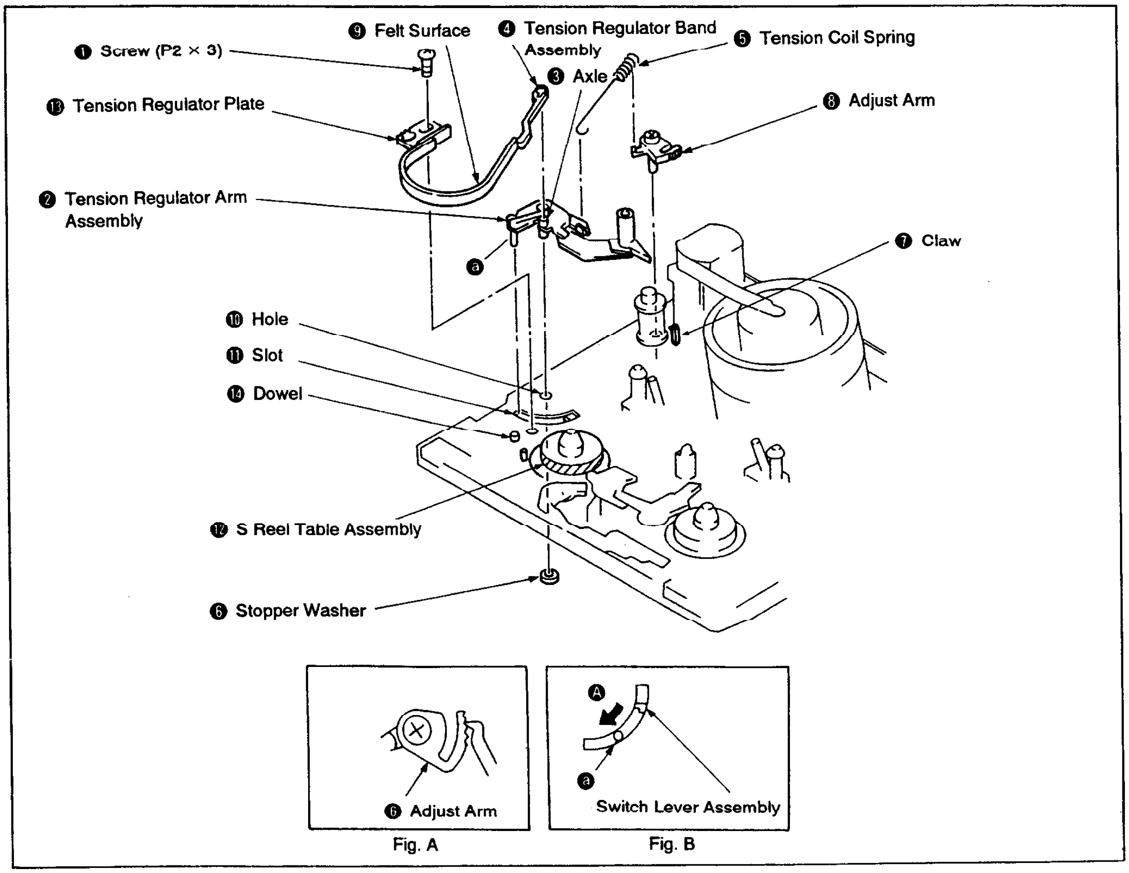

❶ Screw (P2 × 3)
❾ Felt Surface
❹ Tension Regulator Band Assembly
❸ Axle
❺ Tension Coil Spring
⓭ Tension Regulator Plate
❽ Adjust Arm
❷ Tension Regulator Arm Assembly
ⓐ
❼ Claw
❿ Hole
⓫ Slot
⓮ Dowel
⓬ S Reel Table Assembly
❻ Stopper Washer
❻ Adjust Arm
Ⓐ
ⓐ
Switch Lever Assembly

Fig. A

Fig. B

Fig. 3-12.

3-12. TENSION REGULATOR FWD POSITION PRESET (See Fig. 3-13.)

1) Load a cassette tape and set the FWD mode.
2) Confirm whether the distance between ⓐ part of the tension regulator arm ❶ and the groove ❷ of the chassis is 1.1 ± 0.3 mm. If this distance is not within the specified range, remove the cassette tape and perform the following adjustment.
3) Loosen the fixing screw ❹ of the tension regulator band assembly ❸.
4) Slide the tension regulator plate ❺ in the direction of the arrow Ⓐ if the measured distance is over the specified range, and in the direction of the arrow Ⓑ if it is under that range. Then, fix it with the screw ❹.
5) Repeat steps 1) and 2) and confirm that the distance is within the specified range.

Note: Use a cassette with the tape advanced halfway.

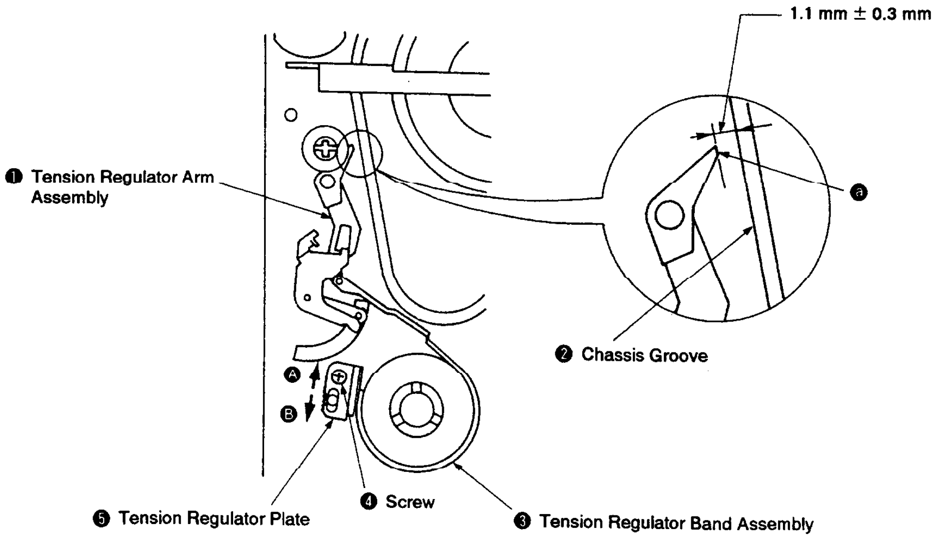

1.1 mm ± 0.3 mm
❶ Tension Regulator Arm Assembly
ⓐ
❷ Chassis Groove
Ⓐ
Ⓑ
❹ Screw
❺ Tension Regulator Plate
❸ Tension Regulator Band Assembly

Fig. 3-13.

3-13. DRUM ASSEMBLY, DEW SENSOR

1. Removal (See Fig. 3-14.)

1) Set the EJECT mode.
2) Remove the flexible board ❶ and the two connectors ❷.
3) Remove the guide guard assembly as described in section 3-2.
4) Remove the screw ❸, then remove the axle ground terminal ❹.
5) Remove the three screws ❺, then remove the drum assembly ❻ from the mechanism chassis.
6) Remove the connector ❿
7) Remove the screw ❼, then remove the dew sensor ❽.

Note:
- When removing the drum assembly ❻ from the mechanism chassis, take care not to cut the flexible board ❶ or the harness.
- Take care not to touch the head tip ❾.

2. Installation (See Fig. 3-14.)

1) Insert part ⓐ of the dew sensor ❽ into the notch ⓫ of the mechanism chassis, then secure it with the screw ❼.
2) Mount the connector ❿.
3) Clamp the harness ⓯ of the dew sensor ❽ with the reinforcing the claw ⓰ of the plate SS assembly (See Fig. A).
4) Insert the connector ❷ and the flexible board ❶ into the hole ⓬ of the mechanism chassis, align the drum assembly ❻ with the two dowels ⓭ and secure it with the three screws ❺.
5) Align the axle ground terminal ❷ with the two dowels ⓮ of the mechanism chassis and secure it with the screw ❸.
6) Mount the guide guard assembly as described in section 3-2.
7) Mount the two connectors ❷ and the flexible board ❶.

Note:
- Take care not to cut the flexible board ❶ or the harness ⓯.
- Take care not to touch the head tip ❾.
- After assembling, be sure to perform Tape Path Adjustment following instructions in section 4.

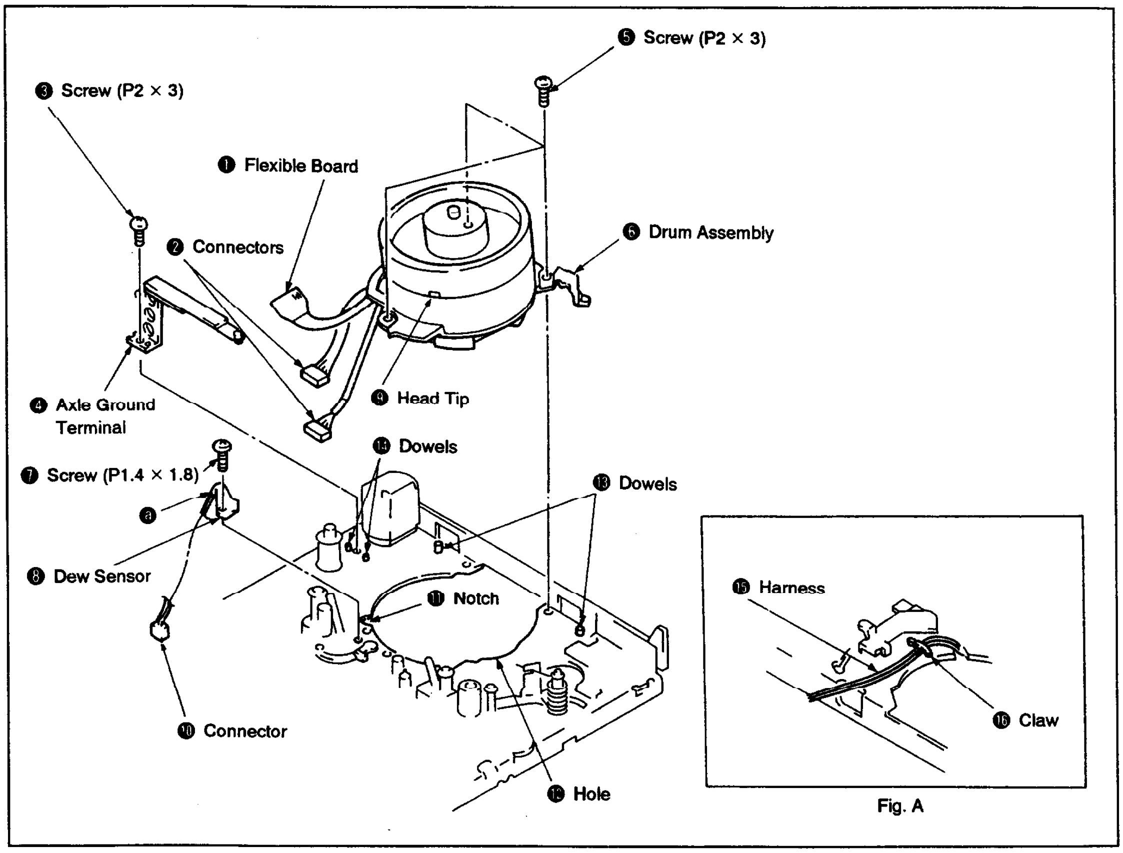

❺ Screw (P2 × 3)
❸ Screw (P2 × 3)
❶ Flexible Board
❷ Connectors
❻ Drum Assembly
❹ Axle Ground Terminal
❾ Head Tip
⓮ Dowels
❼ Screw (P1.4 × 1.8)
⓭ Dowels
ⓐ
❽ Dew Sensor
⓫ Notch
⓯ Harness
⓰ Claw
❿ Connector
⓬ Hole
Fig. A

Fig. 3-14.

3-14. EJECT LEVER, SWITCH LEVER ASSEMBLY, PINCH ROLLER SUB ARM ASSEMBLY

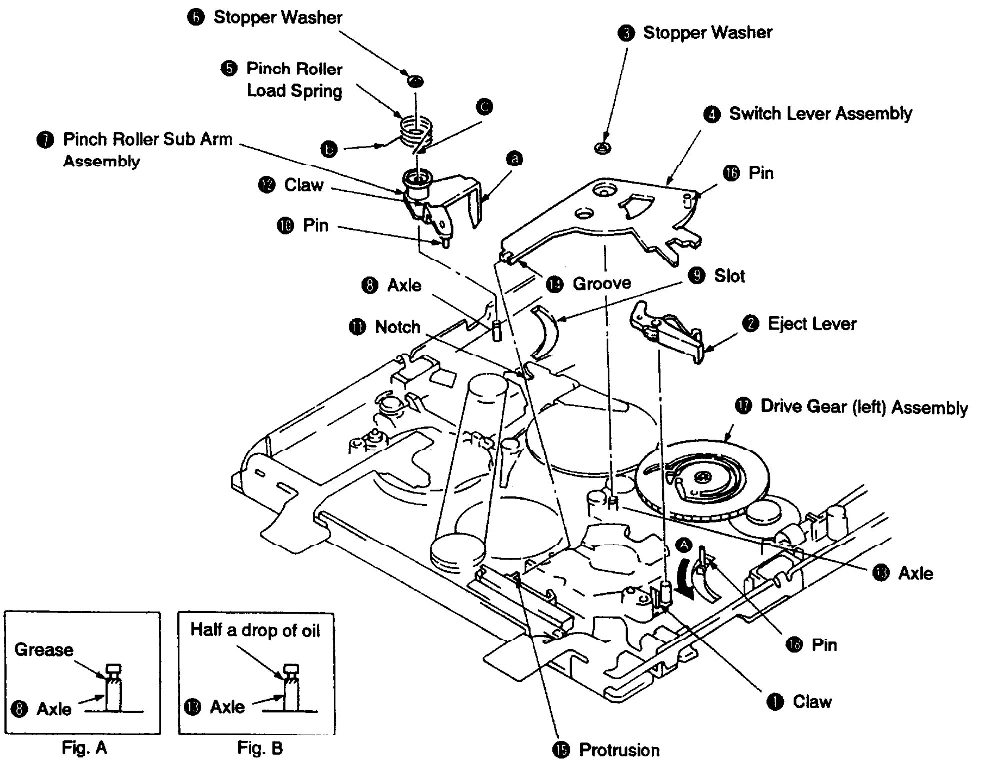
1. Removal (See Fig. 3-15.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Set the $\boxed{\text{STOP}}$ mode.
3) Remove the claw ❶, then remove the eject lever ❷.
4) Remove the stopper washer ❸, then remove the switch lever assembly ❹.
5) Remove the pinch roller load spring ❺.
6) Remove the stopper washer ❻, then remove the pinch roller sub arm assembly ❼.

2. Installation (See Fig. 3-15.)

1) Grease the axle ❽ (See Fig. A).
2) Assemble by inserting ⓐ part of the pinch roller sub arm assembly ❼ into the slot ❾, then insert the pin ❿ into the loading lever assembly notch ⓫.
3) Secure with the stopper washer ❻.
4) Mount the pinch roller load spring ❺ by catching its ⓑ end between the claw ⓬ and the chassis side and its ⓒ end to the claw ⓱.
5) Apply half a drop of oil to the axle ⓭ (See Fig. B).
6) Align the groove ⓮ of the switch lever assembly ❹ with the mode detector switch protrusion ⓯, mount it on the axle ⓭, then insert the pin ⓰ into the drive gear (left) assembly ⓱ outer groove.
7) Secure with the stopper washer ❸.
8) Mount the eject lever ❷ and close the claw ❶.
9) Mount the DC motor (capstan motor) as described in section 3-3.

Note: When mounting the switch lever assembly ❹ onto the axle ⓭ with the tension regulator arm assembly installed, set the pin ⓰ to the arrow 🅐 side of the switch lever assembly ❹.



❻ Stopper Washer
❺ Pinch Roller Load Spring
ⓒ
❼ Pinch Roller Sub Arm Assembly
ⓑ
ⓐ
⓬ Claw
❿ Pin
❽ Axle
⓫ Notch
❸ Stopper Washer
❹ Switch Lever Assembly
⓰ Pin
⓮ Groove
❾ Slot
❷ Eject Lever
⓱ Drive Gear (left) Assembly
🅐
⓭ Axle
⓰ Pin
❶ Claw
⓯ Protrusion
Grease
❽ Axle
Fig. A
Half a drop of oil
⓭ Axle
Fig. B

Fig. 3-15.

3-15. TIMING BELT (L) , RC GEAR ASSEMBLY, LOADING LEVER ASSEMBLY, TIMING BELT (S), CONNECTING GEAR ASSEMBLY

1. Removal (See Fig. 3-16.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the pinch roller sub arm assembly as described in section 3-14.
3) Set the STOP mode.
4) Remove the stopper washer ❶ , then remove the RC gear assembly ❷ from the axle ❹ with the timing belt (L) ❸ attached.
5) Remove the timing belt (L) ❸ from the idler pulley assembly ❺ .
6) Remove the stopper washer ❻ and remove the loading lever assembly ❽ while pushing the claw ❼ in the direction of the arrow 🅐 .
7) Turn the stopper ❾ approx. 90 ° in the direction of the arrow 🅑 .
8) Remove the connecting gear assembly ⓫ from the axle ⓰ with the timing belt (S) ❿ attached.
9) Remove the timing belt (S) ❿ from the idler pulley assembly ❺ .

Note: When removing the connecting gear ⓫ , take care not touch the flange section ⓑ .

2. Installation (See Fig. 3-16.)

1) Apply half a drop of oil to the axle ⓰ (See Fig. F).
2) Hook one end of the timing belt (S) ❿ onto the connecting gear assembly ⓫ and the other end onto gear ⓓ of the idler pulley assembly ❺ . (Refer to the figure.)
3) Mount the connecting gear assembly ⓫ with the timing belt (S) ❿ attached to the axle ⓰ .
4) Turn the stopper ❾ in the direction of the arrow 🅒 as far as it will go.
5) Apply half a drop of oil to the axle ⓬ (See Fig. A).
6) Fit the loading lever assembly ❽ to the axle ⓬ , secure the ⓐ part with the claw ❼ and place the pin ⓭ into the groove of the drive gear (right) assembly ⓮ .
7) Install the stopper washer ❻ .
8) Place the timing belt (L) ❸ around the gears of the RC gear assembly ❷ indicated in Fig. B, and its opposite side around the gear ⓒ of the idler pulley assembly ❺ . (See Fig. E.)
9) Mount the RC gear assembly ❷ onto the axle ❹ with the timing belt (L) ❸ attached, and engage it with the gear of the RK gear assembly ⓯ .
10) Install the stopper washer ❶ .
11) Grease parts of the loading lever assembly ❽ indicated in Fig. C.
12) Mount the pinch roller sub arm assembly as described in section 3-14.
13) Mount the DC motor (capstan motor) as described in section 3-3.

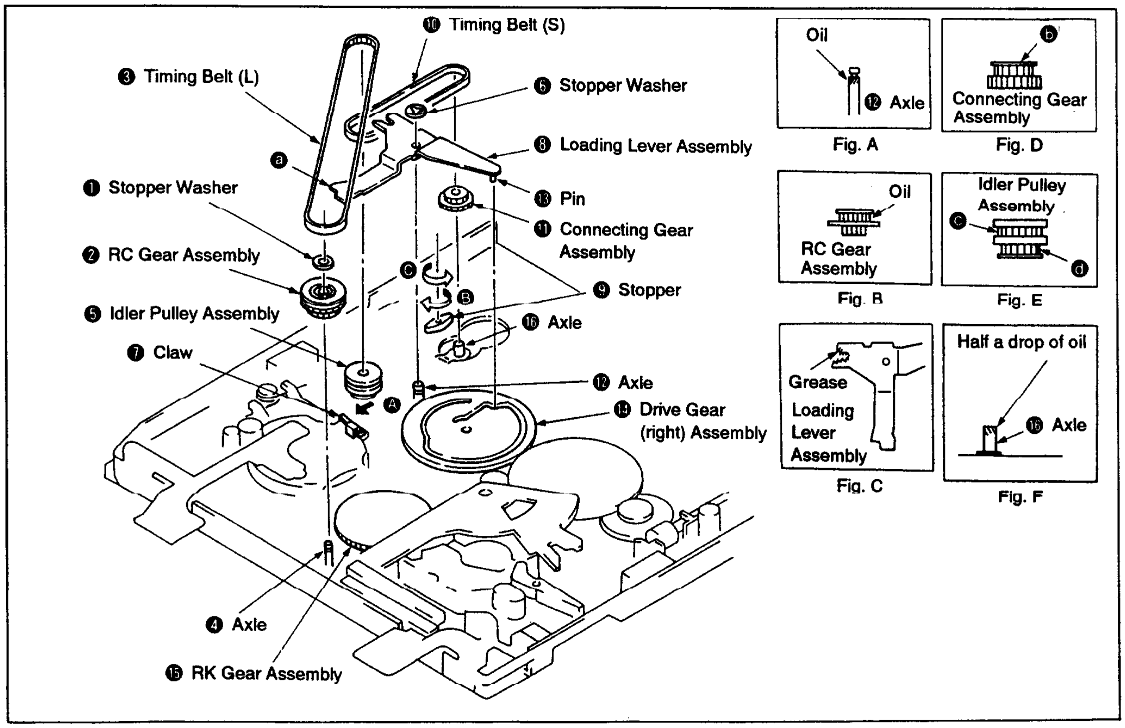

❿ Timing Belt (S)
❸ Timing Belt (L)
❻ Stopper Washer
❽ Loading Lever Assembly
ⓐ
❶ Stopper Washer
⓭ Pin
⓫ Connecting Gear Assembly
❷ RC Gear Assembly
🅒
🅑
❾ Stopper
❺ Idler Pulley Assembly
⓰ Axle
❼ Claw
⓬ Axle
🅐
⓮ Drive Gear (right) Assembly
❹ Axle
⓯ RK Gear Assembly
Oil
⓬ Axle
Fig. A
ⓑ
Connecting Gear Assembly
Fig. D
Oil
RC Gear Assembly
Fig. B
Idler Pulley Assembly
ⓒ
ⓓ
Fig. E
Grease
Loading Lever Assembly
Fig. C
Half a drop of oil
⓰ Axle
Fig. F

Fig. 3-16.

3-16. IDLER PULLEY, TS BRAKE ASSEMBLY, LB GEAR ASSEMBLY, RK GEAR ASSEMBLY

1. Removal (See Fig. 3-17.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly described in section 3-15.
4) Set the STOP mode.
5) Remove the stopper washer ❶, then remove the idler pulley ❷.
6) Open the claw ❸, then remove the TS brake assembly ❹.
7) Remove the torsion coil spring (LB) ❺.
8) Remove the stopper washer ❻, then remove the LB gear assembly ❼.
9) Remove the RK gear assembly ❽.

Note: When removing the idler pulley ❷, take care not to touch the flange section 🅐. (See Fig. C.)

2. Installation (See Fig. 3-17.)

1) Apply half a drop of oil to the axle ❾ (See Fig. A).
2) Mount the RK gear assembly ❽ onto the axle ❾, keeping it in horizontal position.
3) Apply half a drop of oil to the axle ❿ (See Fig. B).
4) Mount the LB gear assembly ❼ onto the axle ❿ and secure it with the stopper washer ❻.
5) Insert the torsion coil spring (LB) ❺ into the axle ⓫, then hook it to the mechanism chassis notch ⓬ and to the tab ⓭.
6) Mount the TS brake assembly ❹ and close the claw ❸.
7) Apply half a drop of oil to the axle ⓰ (See Fig. D).
8) Mount the idler pulley ❷ onto the axle ⓰, then secure it with the stopper washer ❶.
9) Mount the timing belt (L), the RC gear assembly, the loading lever assembly, the timing belt (S) and the connecting gear assembly as described in section 3-15.
10) Mount the switch lever assembly as described in section 3-14.
11) Mount the DC motor (capstan motor) as described in section 3-3.

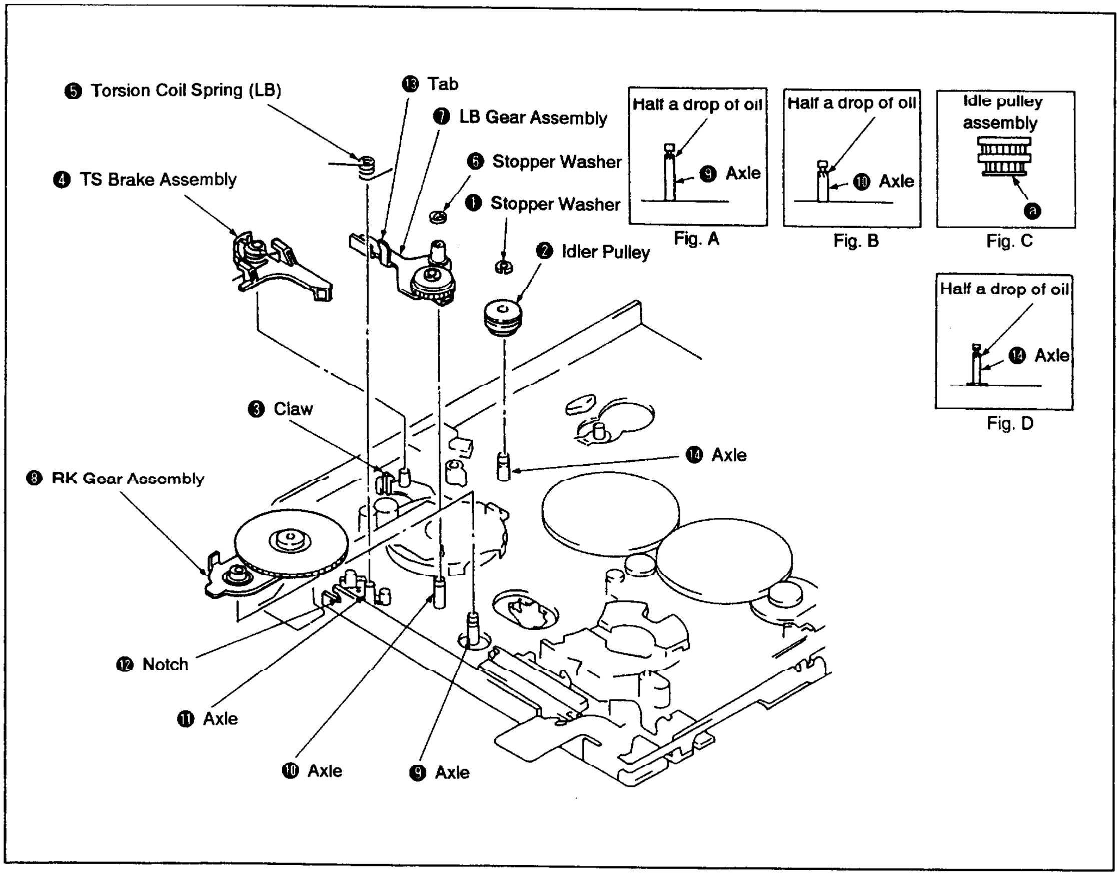

❺ Torsion Coil Spring (LB)
⓭ Tab
❼ LB Gear Assembly
❻ Stopper Washer
❶ Stopper Washer
❹ TS Brake Assembly
❷ Idler Pulley
❸ Claw
⓮ Axle
❽ RK Gear Assembly
⓬ Notch
⓫ Axle
❿ Axle
❾ Axle
Half a drop of oil
❾ Axle
Fig. A
Half a drop of oil
❿ Axle
Fig. B
Idle pulley assembly
🅐
Fig. C
Half a drop of oil
⓮ Axle
Fig. D

Fig. 3-17.

3-17. UL GEAR, UL BRAKE, UL ARM, LB PLATE SPRING

1. Removal (See Fig. 3-18.)

1) Remove the switch lever assembly as described in section 3-14.
2) Remove the stopper washer ❶, then remove the UL gear ❷.
3) Remove the UL arm ❸, the 1.6 mm-diameter poly washer ❹ and the LB plate spring ❺.
4) Remove the UL brake ❻.

2. Installation (See Fig. 3-18.)

1) Mount the UL brake ❻.
2) Apply half a drop of oil to the axle ❼ (See Fig. A).
3) Mount the LB plate spring ❺ to the axle ❼ as shown in Fig. B, then install the 1.6mm-diameter poly washer ❹.
4) Mount the UL arm ❸ to the axle ❼ so that the protrusion ❽ comes into the groove ❾ of the UL brake ❻.
5) Mount the UL gear ❷ to the axle ❼ and engage it with the gear of the drive gear (left) assembly ❿.
6) Install the stopper washer ❶.
7) Mount the switch lever assembly as described in section 3-14.

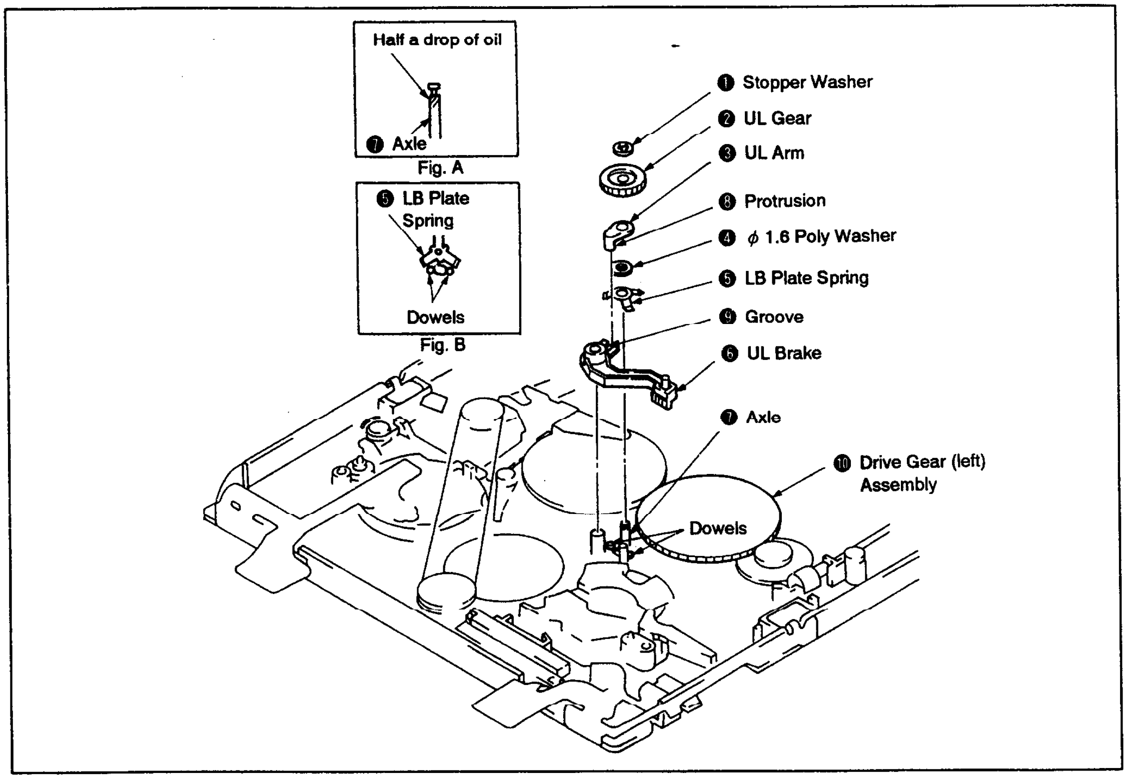

Half a drop of oil
❼ Axle
Fig. A
❺ LB Plate Spring
Dowels
Fig. B
❶ Stopper Washer
❷ UL Gear
❸ UL Arm
❽ Protrusion
❹ ϕ 1.6 Poly Washer
❺ LB Plate Spring
❾ Groove
❻ UL Brake
❼ Axle
❿ Drive Gear (left) Assembly
Dowels

Fig. 3-18.

3-18. COASTER (RIGHT) ASSEMBLY, DRIVE GEAR (RIGHT) ASSEMBLY

1. Removal (See Fig. 3-19.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum unit as described in section 3-13.
3) Remove the switch lever assembly as described in section 3-14.
4) Remove the timing belt (L) , the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Set the STOP mode.
6) Remove the screw ❶ , then remove the coaster plate spring ❷ and the coaster (right) assembly ❸ .
7) Remove the two screws ❹ , then remove the reinforcing plate TT ❺ .
8) Remove the stopper washer 1.5 ❻ , then remove the drive gear (right) assembly ❼ .

2. Installation (See Fig. 3-19.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. F).
3) Grease pin ❾ , axle ❿ and dowel ⓮ of the coaster (right) assembly ❸ (See Fig. D).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Move the brake release arm ⓬ in the direction of the arrow Ⓐ to put it out of the way.
6) Mount the drive gear (right) assembly ❼ to the axle ❽ , and engage it with the drive gear (left) assembly ⓭ as shown in Fig. B.
7) Align the ⓐ part with the ⓑ part, and the hole ⓮ with the pin ❾ of the coaster (right) assembly ❸ .
8) Install the stopper washer 1.5 ❻ .
9) Mount by aligning the coaster plate spring ❷ with the axle ❿ of the coaster (right) assembly ❸ and pin ❾ , then secure with the screw ❶ .
10) Mount the reinforcing plate TT ❺ aligning it with the dowel ⓯ , then tighten the two screws ❹ in the indicated order.
11) Grease the points indicated in Figs. C and E.
12) Mount the timing belt (L) , the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly as described in section 3-14.
14) Mount the drum unit as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

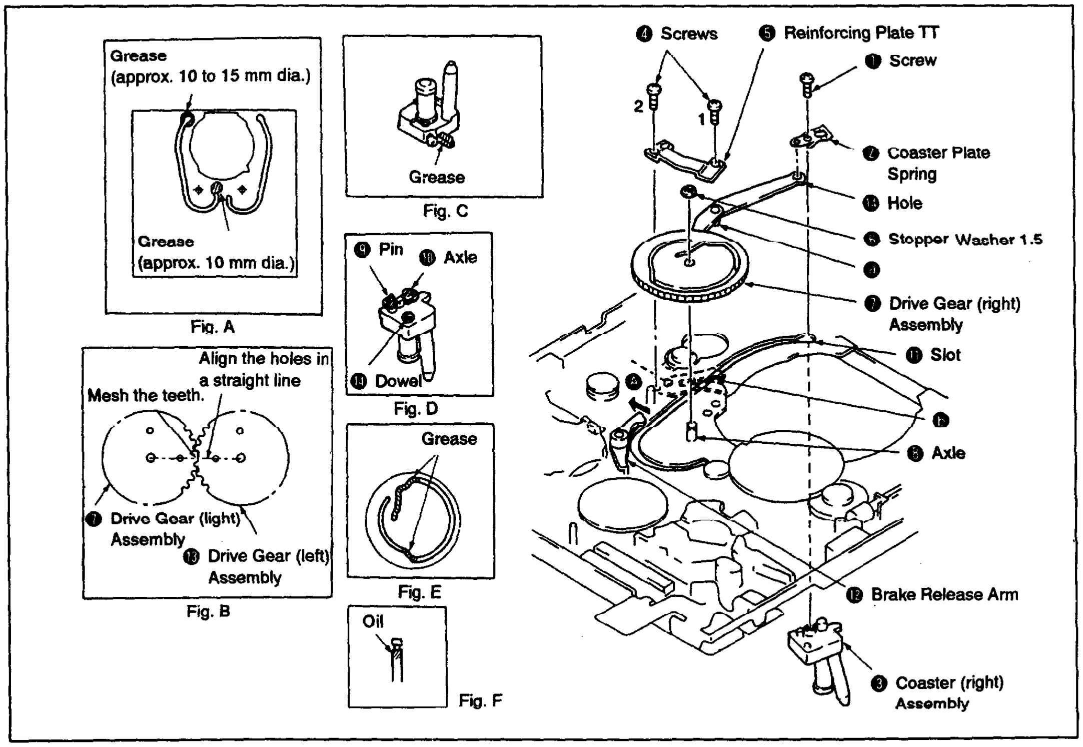

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
Grease
❾ Pin
❿ Axle
⓮ Dowel
Grease
Oil
Align the holes in a straight line
Mesh the teeth.
❼ Drive Gear (light) Assembly
⓭ Drive Gear (left) Assembly
❹ Screws
❺ Reinforcing Plate TT
❶ Screw
2
1
❷ Coaster Plate Spring
⓮ Hole
❻ Stopper Washer 1.5
ⓐ
❼ Drive Gear (right) Assembly
⓫ Slot
Ⓐ
ⓑ
❽ Axle
⓬ Brake Release Arm
❸ Coaster (right) Assembly

Fig. A

Fig. B

Fig. C

Fig. D

Fig. E

Fig. F

Fig. 3-19.

3-19. COASTER (LEFT) ASSEMBLY, DRIVE GEAR (LEFT) ASSEMBLY

1. Removal (See Fig. 3-20.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the drum assembly as described in section 3-13.
3) Remove the switch lever assembly and the pinch roller sub-arm assembly as described in section 3-14.
4) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
5) Remove the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
6) Remove the screw ❶, then remove the coaster plate spring ❷ and the coaster (left) assembly ❸.
7) Remove the two screws ❹, then remove the reinforcing plate SS assembly ❺.
8) Remove the stopper washer 1.5 ❻, then remove the drive gear (left) assembly ❼.

2. Installation (See Fig. 3-20.)

1) Grease the points of the mechanism chassis shown in Fig A.
2) Apply half a drop of oil to the axle ❽ (See Fig. E).
3) Grease pin ❾, axle ❿ and dowel ⓯ of the coaster (left) assembly ❸ (See Fig. B).
4) Mount by aligning the pin ❾ and the axle ❿ with the slot ⓫ of the mechanism chassis.
5) Fit the drive gear (left) assembly ❼ to the axle ❽, and mount so that the gear engages with the wheel gear ⓬ and the UL gear ⓭.
6) Align the ⓐ part with the slot ⓫, and the hole ⓮ with the pin ❾ of the coaster (left) assembly ❸.
7) Install the stopper washer 1.5 ❻.
8) Mount by aligning the coaster plate spring ❷ with the axle ❿ and pin ❾ of the coaster (left) assembly ❸, then secure with the screw ❶.
9) Mount the reinforcing plate SS assembly ❺ aligning it with the dowel ⓯, then tighten the two screws ❹ in the indicated order.
10) Grease points indicated in Figs. C and D.
11) Mount the coaster (right) assembly and the drive gear (right)assembly as described in section 3-18.
12) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
13) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
14) Mount the drum assembly as described in section 3-13.
15) Mount the DC motor (capstan motor) as described in section 3-3.

Note:
- Screw ❶ should be tightened with a tightening torque of approx. 500g•cm. If tightened too much, the coaster (right) assembly ❸ and the coaster plate spring ❷ will be deformed.
- After installing, be sure to perform tape path adjustment as described in section 4.

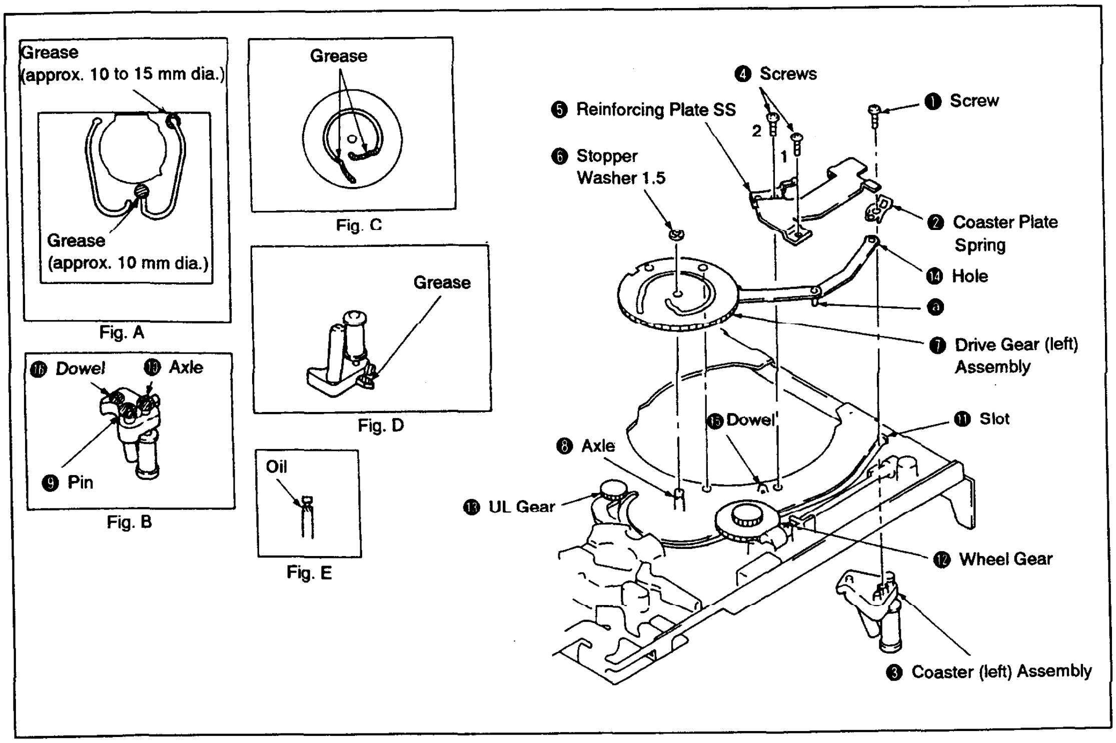

Grease
(approx. 10 to 15 mm dia.)
Grease
(approx. 10 mm dia.)
⓯ Dowel
❿ Axle
❾ Pin
Grease
Grease
Oil
❹ Screws
❺ Reinforcing Plate SS
2
1
❻ Stopper Washer 1.5
❶ Screw
❷ Coaster Plate Spring
⓮ Hole
ⓐ
❼ Drive Gear (left) Assembly
⓯ Dowel
❽ Axle
⓫ Slot
⓭ UL Gear
⓬ Wheel Gear
❸ Coaster (left) Assembly

Fig. A

Fig. B

Fig. C

Fig. D

Fig. E

Fig. 3-20.

3-20. LOADING MOTOR, BRAKE RELEASE ARM, WHEEL GEAR, WORM ASSEMBLY

1. Removal (See Fig. 3-21.)

1) Remove the DC motor (capstan motor) as described in section 3-3.
2) Remove the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
3) Remove the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
4) Remove the drive gear (right) assembly as described in section 3-18.
5) Remove the drive gear (left) assembly as described in section 3-19.
6) Remove the two screws ❶, then remove the loading motor assembly ❷.
7) Remove the brake release arm ❸.
8) Remove the stopper washer ❹, then remove the wheel gear ❺.
9) Remove the worm assembly ❻ from the six claws ❼.

2. Installation (See Fig. 3-21.)

1) Mount the worm assembly ❻, matching it to the six claws ❼.
2) Grease the shaded parts of the worm assembly ❻ (five places) (see Fig A).
3) Apply half a drop of oil to the axle ❽ (See Fig. B).
4) Fit the wheel gear ❺ to the axle ❽ and engage it with the gear of the worm assembly ❻.
5) Mount the brake release arm ❸.
6) Grease the whole perimeter of the gear of the loading motor assembly ❷.
7) Align the loading motor assembly ❷ with the mechanism chassis and secure it with the two screws ❷.
8) Mount the drive gear (left) assembly as described in section 3-19.
9) Mount the drive gear (right) assembly as described in section 3-18.
10) Mount the timing belt (L), the RC gear assembly and the loading lever assembly as described in section 3-15.
11) Mount the switch lever assembly and the pinch roller sub arm assembly as described in section 3-14.
12) Mount the DC motor (capstan motor) as described in section 3-3.

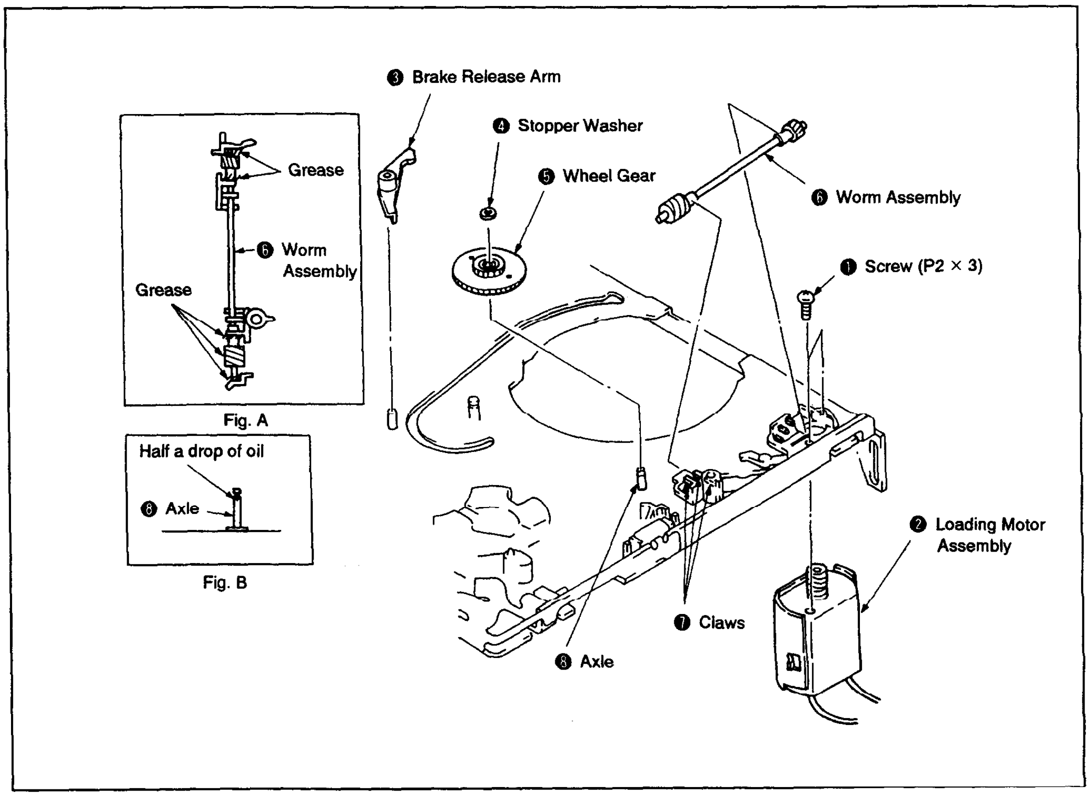


Fig. A

Fig. B

Fig. 3-21.

3-21. ROTARY UPPER DRUM REPLACEMENT

1. Removal

- If possible, make a recording before removal.

1) Detach the six solderings ❾, then use a pair of tweezers or the like to confirm that the terminals passing through the board holes from below can move freely.
2) Remove the two screws ❶ (See Fig. 3-22).
3) Mount the jig ❹ (Ref. No. J-7) with the two supplied screws ❷, then screw the attached hexagon socket screws ❸ to the jig ❹. The rotary upper drum ❺ will move upward and come off (See Fig. 3-23).

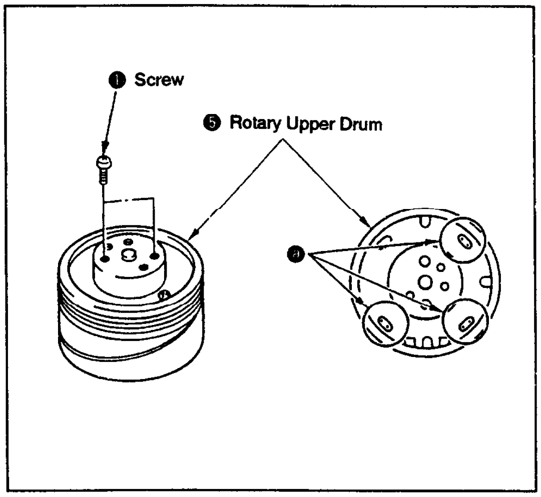


Fig. 3-22.

2. Installation

1) Wipe clean the flange surface and the rotary upper drum ❺ surface that makes contact with it, and confirm that they are free from dirt and scratches.
2) Insert the jig ❼ (Ref. No. J-7) into the drum positioning hole, then set the rotary upper drum ❺ by passing the jig through its positioning hole ❻.

   Note: Confirm that the terminals ❽ protrude slightly from the rotary upper drum board holes (See Fig. 3-24).
3) Remove the jig ❼ and push down the rotary upper drum ❺ gently by hand. If it does not go all the way down, secure it temporarily by tightening the two hexagon socket screws ❶ alternately.
4) Insert the jig ❼ into the positioning hole ❻ again and confirm that it goes in smoothly. If it does not, loosen the two screws ❶, repeat step 3 of the Removal paragraph and restart the setting procedure.
5) Tighten the screws ❶.
6) Solder the terminals ❽ (❾ in Fig. 3-22).

   Note: Take care that no solder flows below the board.

Note: After installing, be sure to perform tape path adjustment as described in section 4.

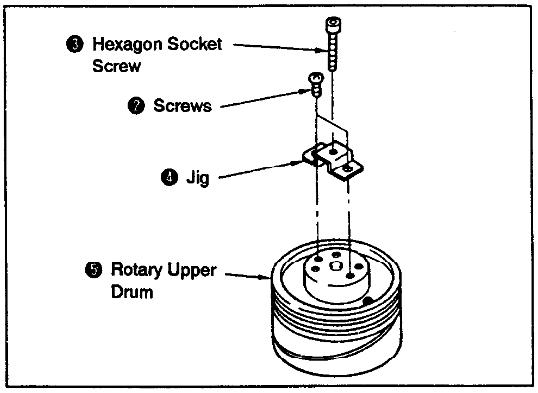


Fig. 3-23.

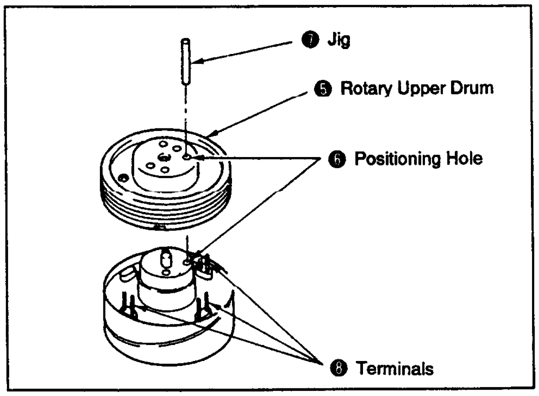


Fig. 3-24.

3-22. FWD BACK TENSION (See Fig. 3-25.)

1) Set the torque cassette (Ref. No. J-6).
2) Set the FWD mode and confirm that S reel table torque value is within 9 to 13 g•cm.
3) If the torque value does not meet the specification, adjust the adjust arm ❶.

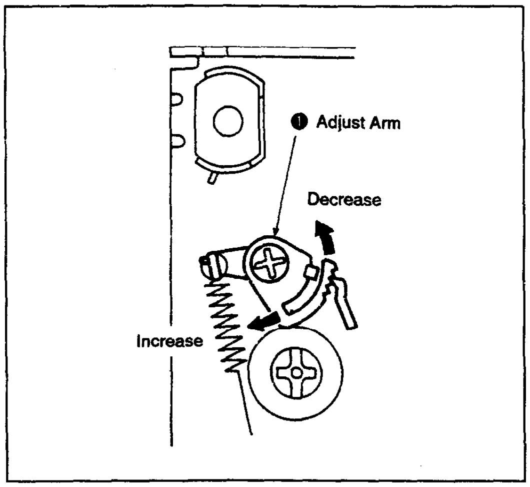


Fig. 3-25.

3-23. REEL TORQUE CHECK

1) Set the torque cassette.
2) Set the FWD mode and confirm that T reel table torque value is within 7 to 15 g•cm.
3) Set the REV mode and confirm that S reel table torque value is within 29 ± 6 g•cm.
4) Set the REV mode and confirm that T reel table torque value is within 13 to 25 g•cm.
5) If a torque value does not meet the specifications above, replace the corresponding reel table.

4. TAPE PATH ADJUSTMENT

[The Track Shift Mode]

In the 8 mm video system, instantaneous tape speed control is performed using four kinds of pilot signals, and high-precision tracking is achieved through the ATF (Automatic Track Finding) system. This makes a tracking control knob unnecessary and allows for precise tracing.

On the other hand, however, tape path adjustment presents some difficulties when the ATF system is used. Namely, since the ATF system will automatically compensate to some degree for head tracing errors, thorough adjustment is not possible.

This can be solved by setting the track shift mode for tracking fine adjustment. ATF will be compulsorily activated, shifting the tracking amount by a fixed amount (approx. 1/4) and thus making tracking fine adjustment easy. Furthermore, no track shift jigs are required.

4-1. TRACK SHIFT MODE SETTING

[Setting Procedure]

- Connect the TEST A and TEST B terminals to the COM terminal.
  Example:
  NTSC ········ GV-8
  PAL ·········· GV-8E
  Connect Pins ① and pin ③ of CN017 on the { SV-34 board (GV-8) / SV-35 board (GV-8E) } to pin ② of it. (See Fig. 4-1)

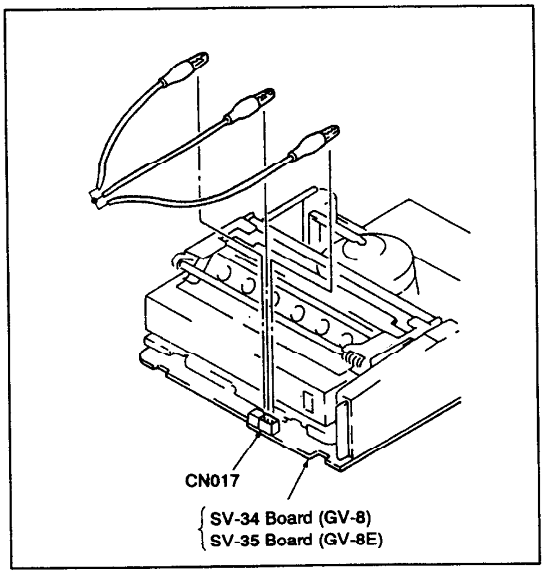
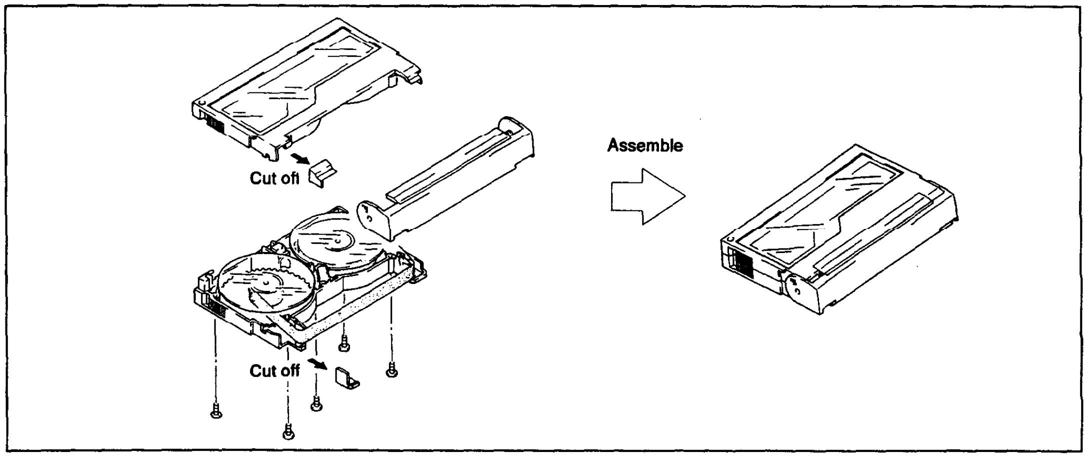


Fig. 4-1.

[Note on Adjustment of No.7 Guide (TG-7)]

The height adjustment screw for No.7 guide (TG-7) is located at some distance from the guide (refer to Fig. 4-2).
Therefore, when performing section 4-6. No.7 Guide (TG-7) Adjustment it is convenient to use the alignment tape for tracking (Ref. No. J-5), modified as follows, and perform adjustment in playback mode.


Cut off
Cut off
Assemble

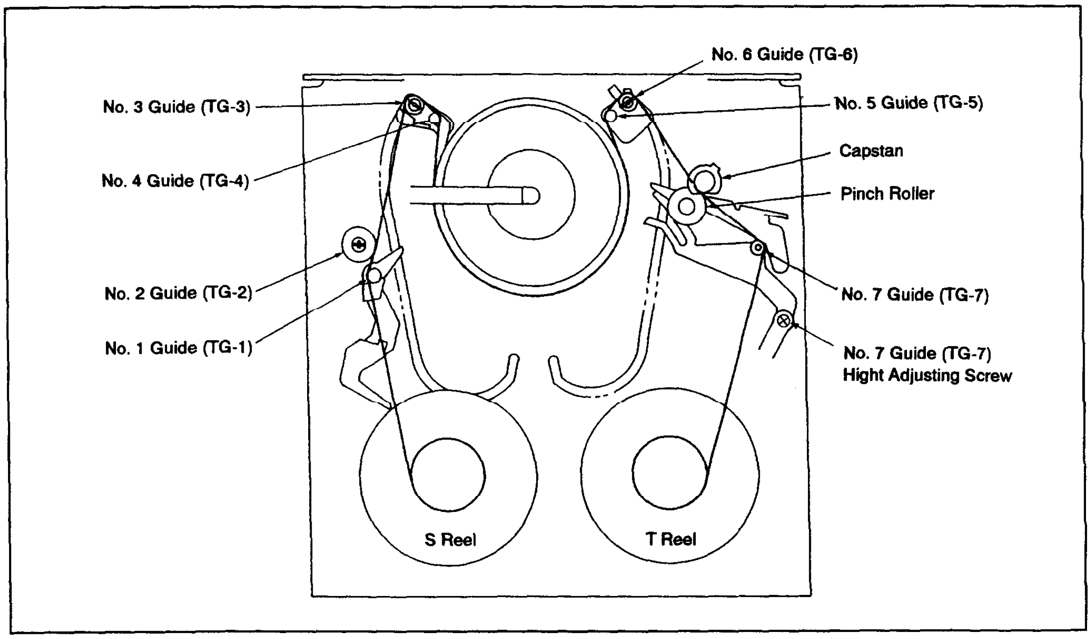

No. 6 Guide (TG-6)
No. 3 Guide (TG-3)
No. 5 Guide (TG-5)
Capstan
No. 4 Guide (TG-4)
Pinch Roller
No. 2 Guide (TG-2)
No. 7 Guide (TG-7)
No. 1 Guide (TG-1)
No. 7 Guide (TG-7)
Hight Adjusting Screw
S Reel
T Reel

Fig. 4-2.

4-2. PREPARATIONS FOR ADJUSTMENT

1) Clean tape path surfaces (tape guides, drum, capstan shaft, pinch roller) (See Fig. 4-2).
2) Connection of oscilloscope and output method of waveform.
   CH 1: RF signal output of the drum head (V RF OUT)
   Method for signal output:
   Short-circuit the external trigger output (RF SW. P) and GND.

   Example:
   NTSC ····· GV-8
   PAL ······· GV-8E
   CH 1: Pin ③ (V RF OUT) of CN018 on the
   SV-34 board (GV-8)
   SV-35 board (GV-8E)
   Method for signal output:
   Short-circuit pin ① (GND) and pin ② (RF SW.P) of CN018 on the
   SV-34 board (GV-8)
   SV-35 board (GV-8E)
3) Play back the alignment tape for tracking adjustment (Ref. No. J-5).
4) Confirm that both the entrance and exit side RF waveforms of the oscilloscope are flat (See Fig. 4-4). If they are not, adjust as follows.

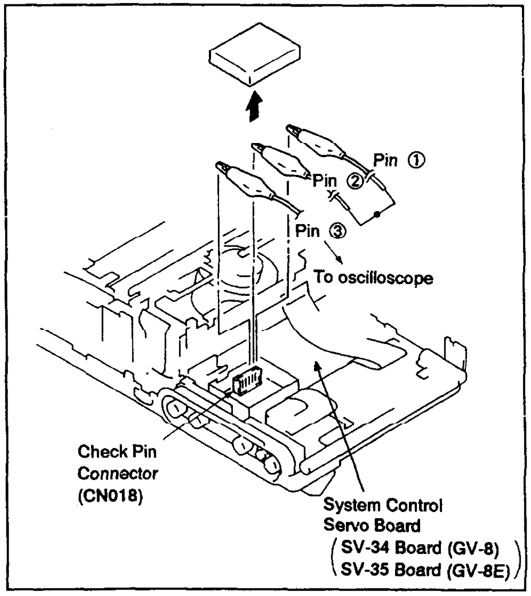

Pin ①
Pin ②
Pin ③
To oscilloscope
Check Pin Connector (CN018)
System Control Servo Board
SV-34 Board (GV-8)
SV-35 Board (GV-8E)

Fig. 4-3.

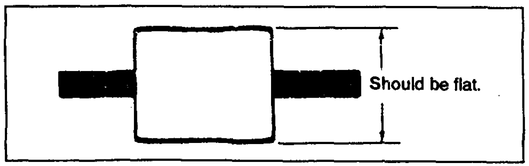

Should be flat.

Fig. 4-4.

4-3. TRACKING ADJUSTMENT (See Fig. 4-5.)

1) Play back the alignment tape for tracking adjustment.
2) Pass a hexagonal wrench, screwdriver (Ref. No. J-11) or the like through the hole ❶, loosen the lockscrew ❷ a little, then make the entrance side waveform flat by turning the No. 3 guide (TG-3) ❸.
3) Pass a hexagonal wrench, screwdriver or the like through the hole ❹, loosen the lockscrew ❺ a little, then make the exit side waveform flat by turning the No. 6 guide (TG-6) ❻.

Note: Take care not to loosen lockscrews too much, since guides come loose easily.

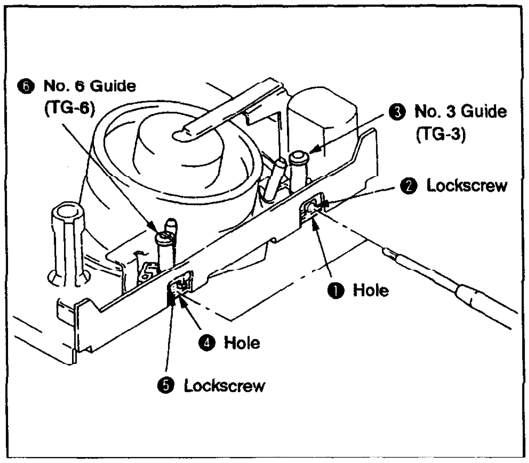

❻ No. 6 Guide (TG-6)
❸ No. 3 Guide (TG-3)
❷ Lockscrew
❶ Hole
❹ Hole
❺ Lockscrew

Fig. 4-5.

4-4. TRACKING FINE ADJUSTMENT (See Figs. 4-5. and 4-6.)

1) Play back the alignment tape for tracking adjustment and set the track shift mode.
2) Confirm whether the waveform is flat. If it is not, turn the No. 3 (TG-3) and No. 6 (TG-6) guides so that it becomes flat.
3) Fix the No. 3 guide ❸ by tightening its lockscrew ❷. Then confirm that the entrance side waveform has not changed.
4) Fix the No. 6 guide ❻ by tightening its lockscrew ❺. Then confirm that the exit side waveform has not changed.

Note: The set screws ❷ and ❺ should be tightened with a tightening torgue of approx. 200g•cm ± 10%.
If tightened too much, there is danger of damaging the thread.

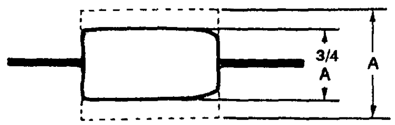


Fig. 4-6.

4-5. No. 2 GUIDE (TG-2) ADJUSTMENT

When the No. 2 guide has been turned or replaced, perform height presetting before this adjustment.

4-5-1. No. 2 Guide (TG-2) Height Presetting (See Fig. 4-7.)

1) Adjust the height from the mechanism chassis upper surface to the TG-2 upper flange ❶ upper surface to 18.6 mm by rotating the TG-2 upper flange ❶.

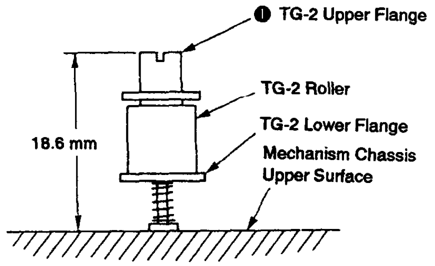


Fig. 4-7.

[Reference]
This U mechanism is equipped with four adjustable guides (TG-2, 3, 6 and 7) . To raise or lower the respective guide rotate the corresponding adjustment screw as shown below.

Guide	Guide adjustment	Rotating direction of adjustment screw
TG-2, 3, 6	Raise	Counterclockwise
	Lower	Clockwise
TG-7	Raise	Counterclockwise
	Lower	Clockwise

4-5-2. No. 2 Guide (TG-2) Adjustment (See Figs. 4-8. and 4-9.)

1) Play back a thin tape like the P6-120MP, etc. and set the REV mode.
2) Confirm that the tape is not bent at the lower flange ❷ of the No. 2 guide (TG-2) ❶ (See Fig. 4-8). If it is, turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ clockwise with a screwdriver, lowering it until the tape is straightened.
3) Play back the alignment tape for tracking adjustment.
4) Perform tracking adjustment and tracking fine adjustment as described in sections 4-3. and 4-4.
5) In the track shift mode, CUE/REV the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds.
6) If the waveform is not normal (See Fig. 4-9), turn the upper flange ❸ of the No. 2 guide (TG-2) ❶ 90° counter-clockwise and repeat step 5.
   Repeat steps 5 and 6 until a normal waveform is obtained. Then, confirm that the tracking waveform has not changed. If it has, perform fine adjustment of entrance side tracking and repeat step 5.

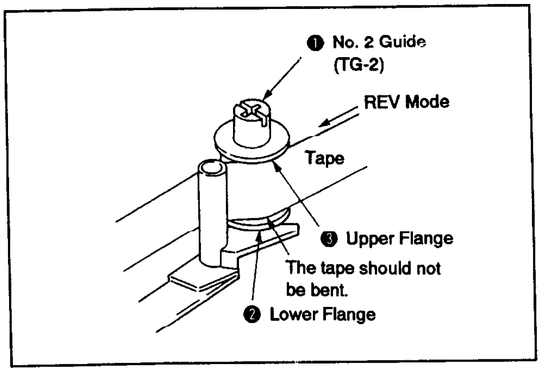

❶ No. 2 Guide
(TG-2)
REV Mode
Tape
❸ Upper Flange
The tape should not be bent.
❷ Lower Flange

Fig. 4-8.

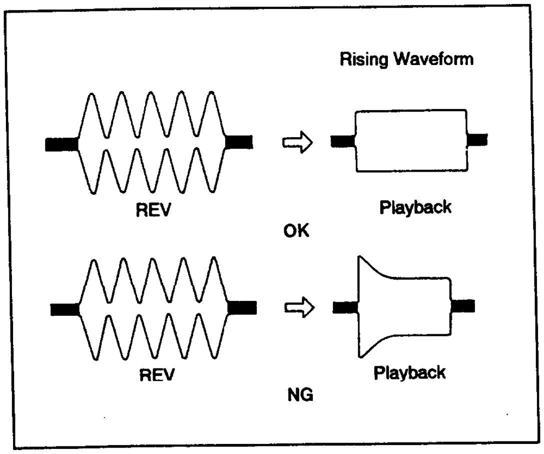

Rising Waveform
REV
OK
Playback
REV
NG
Playback

Fig. 4-9.

4-6. No. 7 GUIDE (TG-7) ADJUSTMENT (See Fig. 4-10.)

1) Play back the alignment tape for tracking adjustment and set the REV mode.
2) Confirm that the tape is not bent between the No. 6 guide (TG-6) ❶ and the capstan ❷ . If it is, turn the hight adjusting screw ❹ of the No. 7 guide (TG-7) ❸ until the tape is straightened.
3) Set the playback mode again and confirm that the tape is not bent between the capstan ❷ and the hight adjusting screw ❹ of the No. 7 guide (specification:0.5 mm or less) . If the tape is bent beyond the specification, turn the No. 7 guide (TG-7) ❸ until bending is within the specification (0.5 mm).
   If in the REV mode tape bending between the No. 6 guide (TG-6) ❶ and the capstan ❷ is 0.3 mm or less, adjustment can be considered completed.

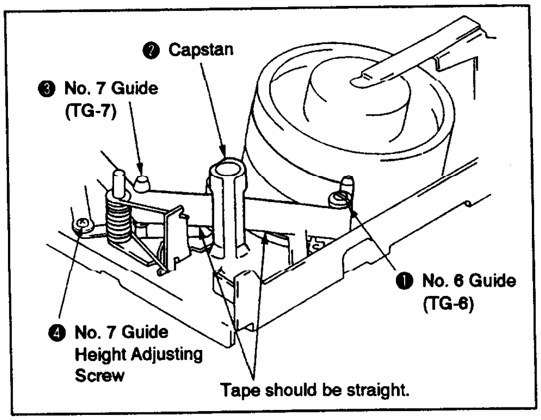

❷ Capstan
❸ No. 7 Guide
(TG-7)
❶ No. 6 Guide
(TG-6)
❹ No. 7 Guide
Height Adjusting
Screw
Tape should be straight.

Fig. 4-10.

4-7. CUE AND REV WAVEFORM CHECK (See Fig. 4-11.)

1) Play back the alignment tape for tracking adjustment and set the REV mode. Confirm that waveform peaks maintain a constant pitch of 5 seconds or more (See Fig. 4-11). In case pitch is not constant, perform section 4-4. Tracking Fine Adjustment and section 4-6. No. 7 Guide Adjustment.
2) Set the CUE mode. Confirm that waveform peaks still maintain a constant pitch of 5 seconds or more (See Fig. 4-11). Otherwise, perform section 4-4. Tracking Fine Adjustment.

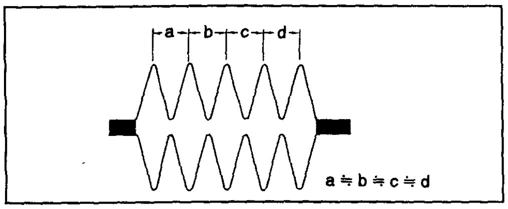


Fig. 4-11.

4-8. CHECK AFTER ADJUSTMENT

4-8-1. Tracking Check

1) Confirm that the amplitude of RF waveform is reduced to approx. 3/4 when the track shift mode is set (See Fig. 4-12).
2) Then, confirm that the minimum amplitude value (EMIN) is 65% of the maximum value (EMAX) or larger (See Fig. 4-13).
3) Confirm that no large fluctuations occur on the waveform (See Fig. 4-14).

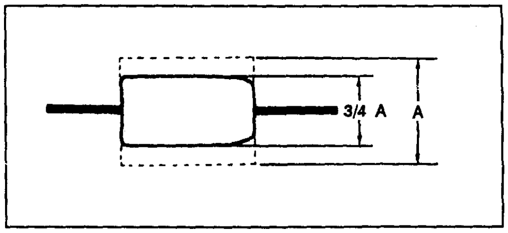


Fig. 4-12.

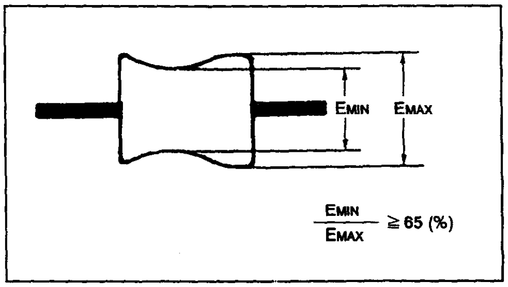


Fig. 4-13.

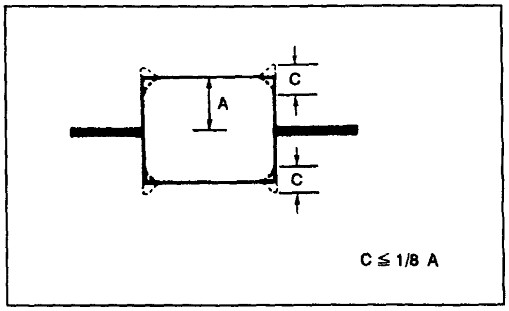


Fig. 4-14.

4-8-2. Rising Check (See Fig. 4-15.)

1) Play back the alignment tape for tracking adjustment.
2) Cancel the track shift mode.
3) Eject the tape, then load it again.
4) Set the playback mode and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller (See Fig. 4-15).
5) CUE/REV and FF/REW the tape, then play it back and confirm that the RF waveform rises flat within 2 seconds. Also confirm that the tape is not bent around the pinch roller.
6) Repeat steps 3) to 5) once more.

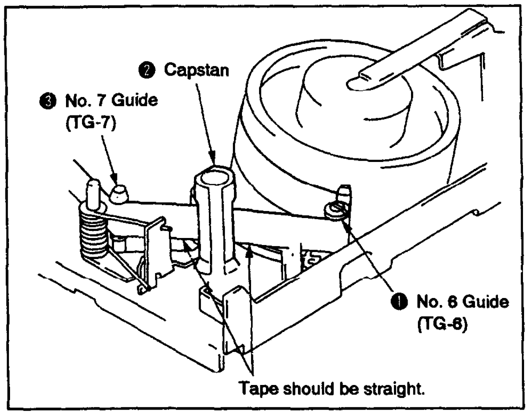

❷ Capstan
❸ No. 7 Guide (TG-7)
❶ No. 6 Guide (TG-6)
Tape should be straight.

Fig. 4-15.

4-8-3. Tape Path Check (See Fig. 4-16.)

1) Play back a thin tape like the P6-120MP (NTSC) or P5-90MP (PAL), etc. and confirm that no tape rising occurs, and that curling is less than 0.3 mm, at the lower flange of the No. 2 guide, the upper flange of the No. 3 guide, the upper flange of the No. 6 guide and the No. 7 guide upper and lower flanges.
2) Confirm that no tape rising occurs and that curling is less than 0.3 mm at the flanges of all guide when pressing the FF button in the playback mode to set the CUE mode, or the REW button to set the REV mode.

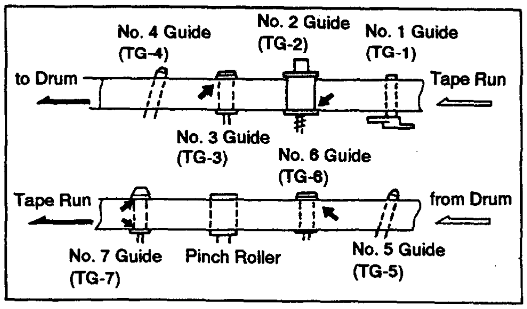

No. 4 Guide (TG-4)
No. 2 Guide (TG-2)
No. 1 Guide (TG-1)
to Drum
Tape Run
No. 3 Guide (TG-3)
No. 6 Guide (TG-6)
Tape Run
from Drum
No. 7 Guide (TG-7)
Pinch Roller
No. 5 Guide (TG-5)

Fig. 4-16.